PIT AND QUARRY

APRIL 1951

In this Issue . . .

National Sand and Gravel Association, National Ready Mixed Concrete Association, American Institute of Mining & Metallurgical Engineers, and American Concrete Institute Convention Reports • Utah Sand and Gravel's New Plant • Conveyor Belt Conservation

Nello L. Teer Company's Straight-line Diesel-Powered Rock Crushing Plant near Durham, N. C.

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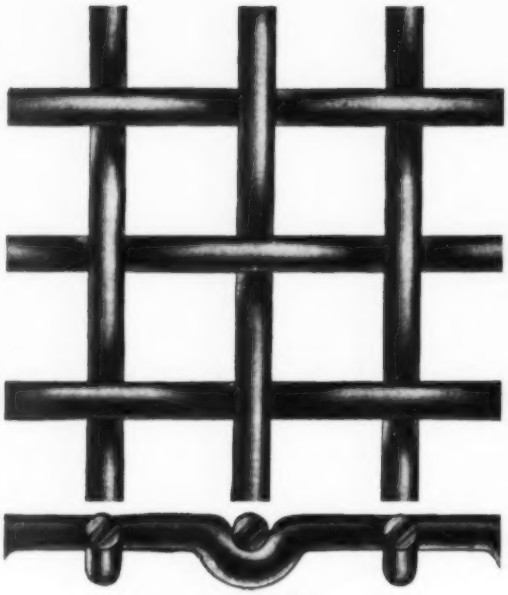
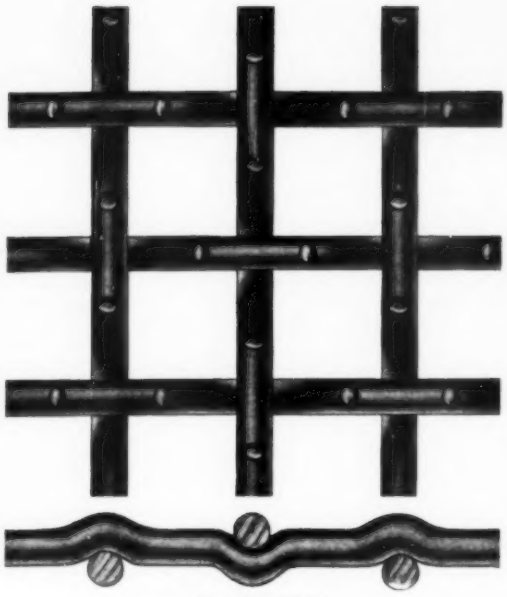


STA-SMOOTH

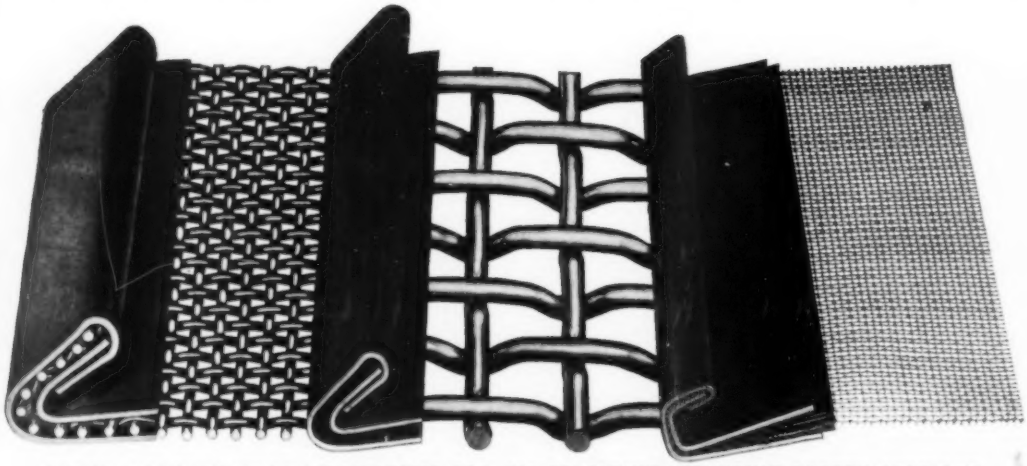


ARCH-CRIMP

SUPER-LOY VIBRATING-SCREEN SECTIONS

SUPER-HARD --- SUPER-TOUGH --- SUPER-STRONG

SUPER-LOY SCREENS are made from a high carbon steel specially alloyed to withstand abrasion longer — endure vibration better — resist fatigue to the utmost



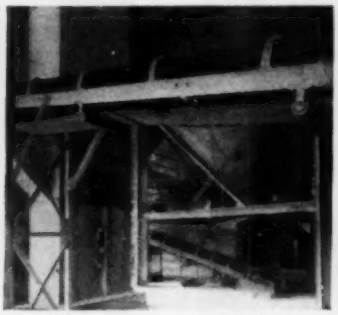
ORDER LUDLOW-SAYLOR HOOK-STRIPS FOR ALL TENSIONED VIBRATING-SCREEN SECTIONS.

THE LUDLOW-SAYLOR WIRE COMPANY

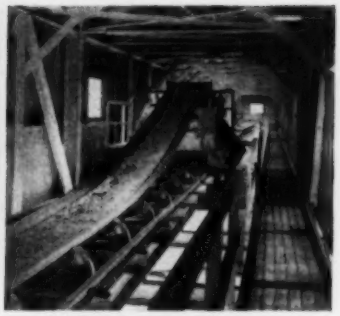
634 S. Newstead Ave. **ST. LOUIS 10, MO.**

LINK-BELT engineering experience...

Link-Belt Belt Conveyor system of gravel preparation plant for large western dam.



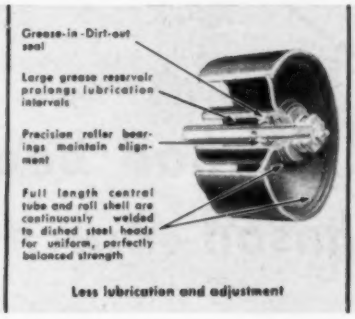
Belt conveyors carrying crushed rock to bucket elevators in a modern cement mill.



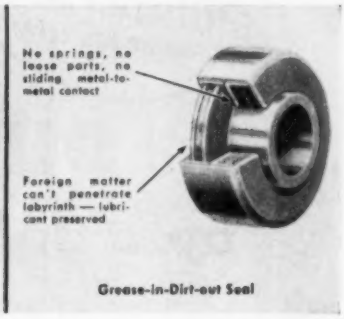
Link-Belt Traveling Tripper discharging gypsum rock from belt conveyor in gallery to open yard storage.

LINK-BELT quality components...

Standard for industry—L-B "100" Idler


Grease-in-Dirt-out seal
Large grease reservoir prolongs lubrication intervals
Precision roller bearings maintain alignment
Full length central tube and roll shell are continuously welded to dished steel heads for uniform, perfectly balanced strength

Less lubrication and adjustment


No springs, no loose parts, no sliding metal-to-metal contact
Foreign matter can't penetrate labyrinth — lubricant preserved

Grease-in-Dirt-out Seal

add up to your best bet in BELT CONVEYORS

LINK-BELT Belt Conveyors provide dependable, efficient travel for many different materials

Get the finest in belt conveyor equipment in your plant. It can be as simple as calling in a Link-Belt engineer while you're still in the planning stage.

Thousands agree Link-Belt builds the finest belt conveyors on the market today. More, it has the most complete line of components—all types and sizes—idlers, take-ups, pulleys, trippers, bearings and power transmission drives. Plus all related equipment—other types of conveyors, feeders, elevators, car dumpers and shakers, shovels, cranes-draglines.

Equally important, Link-Belt Belt Conveyor engineers can draw on the broadest material handling experience in industry. They'll work with you and your consultants—help you come up with the right system for your requirements.

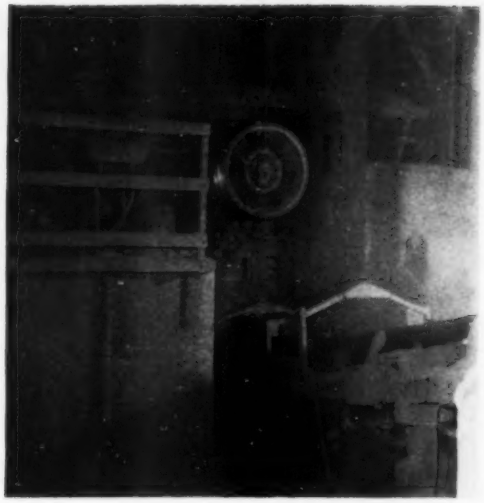
Call or write the Link-Belt branch office nearest you for the services of a belt conveyor expert.

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in Principal Cities. 12,260-C

PIT AND QUARRY, April, 1951, Vol. 43, No. 10. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.



The photo that couldn't be taken

...until **DUST** had been **stopped** by a Johnson-March system!

Crushing trap rock is a dusty operation . . . but we never realized how bad it is until we sent a photographer to secure some "before" and "after" shots of Johnson-March dust control systems at work.

Here is his actual report:

"When sprays were shut off, dust accumulation was so heavy that photograph resulted in a blank negative.

"With the Johnson-March liquid diffusion system (installed one year ago) tests show that dust has been cut 80 to 90 per cent."

If you have a dust problem, no matter how large or small, Johnson-March engineers can solve it. Ducts, fans and other cumbersome equipment are not necessary. Johnson-March compounds added to water do the work. Installation is simple and inexpensive . . . in most cases the cost is only 1/10 as much as other types of dust handling systems.

Without cost or obligation, why not have one of our engineers discuss your dust problems with you? Just drop us a line or mail the attached coupon.

THE JOHNSON-MARCH CORP.
1724 Chestnut St., Philadelphia 3, Pa.
Without cost or obligation, I would like to know more about the Johnson-March system of low-cost dust control. Q-1

Name .....
Company .....
Address ..... State .....
City .....

Johnson March

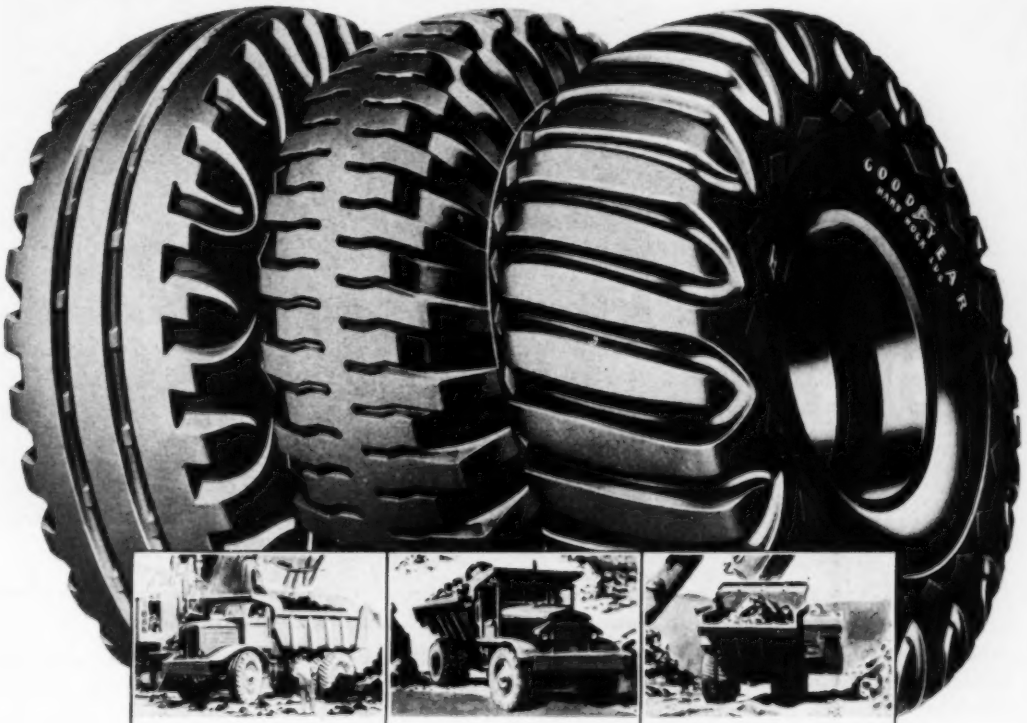
Specialists in Liquid Diffusion

1724 CHESTNUT STREET **Philadelphia 3, Pa.**

Your profits depend on * CPY

That's why more tons are hauled on Goodyear tires than on any other kind!

* **Cost per yard** determines your profits. Cost-conscious pit and quarry operators depend on Goodyear tires for *lowest* cost per yard. That's because each Goodyear tire is designed to give maximum performance on a particular type of hauling job. Choose the right Goodyear work tire for your job and see how *your* cost per yard is reduced – learn why Goodyear tires are America's First Choice. *It pays to BUY and SPECIFY Goodyear!*



THE HARD ROCK RIB

Companion tire for front wheels in rock work—easier steering, smooth rolling, same cord body, same shoulder and sidewall as Hard Rock Lug.

THE ROAD LUG

Remarkable dual-purpose tire operates both OFF and ON the road. Combines off-the-road toughness and traction with on-the-road mileage and economy.

THE HARD ROCK LUG

Super-tough champ for all types of rock work. Its armored carcass and extra heavy lugs assure more wear, better performance even in toughest going.

GOODYEAR

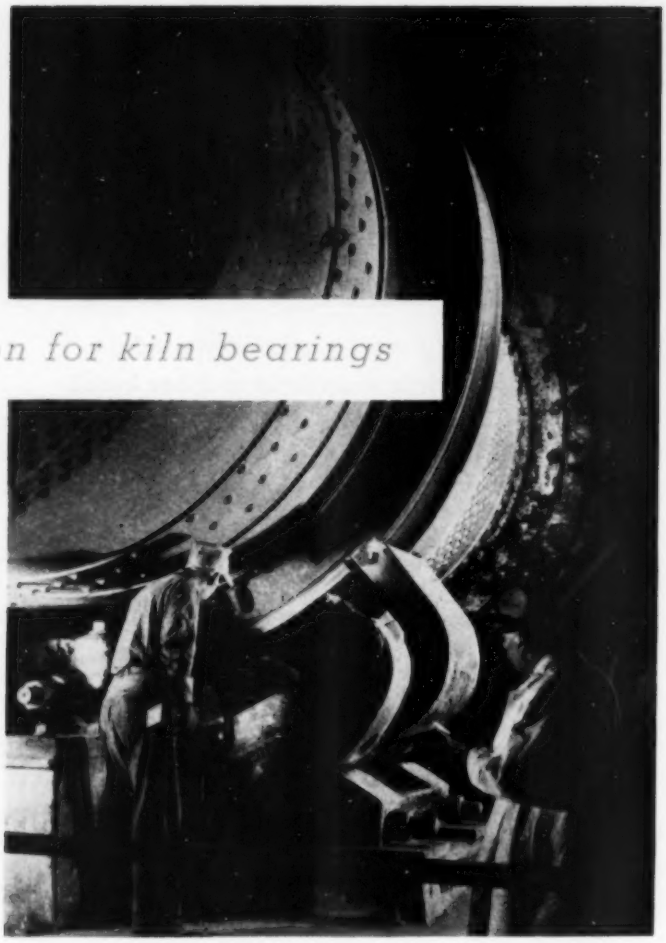
We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

Road Log—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Now

Better Lubrication for kiln bearings

Gulf Block Grease



Gulf Block Grease provides a new kind of lubricating performance in cement kiln bearings, and other open top plain bearings in crushers and pulverizers — keeps them operating cooler, and eliminates the need for supplemental oiling.

Gulf Block Grease is manufactured from a high quality lubricating oil and a special soap base under scientifically controlled conditions. The oil provides a protective film as soon as the shaft begins to rotate—and is released at the most economical rates over a wide range of operating conditions. It is effective at temperatures as high as 275° F. yet is not excessively hard at low operating temperatures.

It has excellent oiliness characteristics and does not glaze—which means the bearing always gets the protection of an effective friction-reducing oil film, and doesn't overheat or wipe.

Call in a Gulf Lubrication Engineer and ask him to show you how Gulf Block Grease can help you increase bearing life and reduce maintenance costs. Write, wire, or phone your nearest Gulf office today. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh 30, Pennsylvania.

FIFTY YEARS OF SERVICE
1901 GULF 1951
PETROLEUM AND ITS PRODUCTS

"Washington calling!"

We were expecting this call. In a sense it is the people of America on the other end of the telephone. For some time they have been calling upon our government to take whatever steps are necessary to equip our fighting men for any job they may have to do.

Korea has proved the fallacy of limited preparedness. You know now that the nation is girding for survival. The people of America have said—and rightly—that private industry should provide the Armed Forces with whatever is necessary.

Machines are being mobilized. "Caterpillar" products are wearing olive drab once more. Because of large military demands your present machines may have to work longer than you had anticipated.

You can get many extra hours of machine service life if you:

1. **Follow a sound program of operation and maintenance.**
2. **Consult your Operator's Instruction Book, using it as a constant guide in caring for your machines.**
3. **Secure the assistance of your "Caterpillar" dealer who now, more than ever before, is your working partner for the grim job that may lie ahead.**

• • •

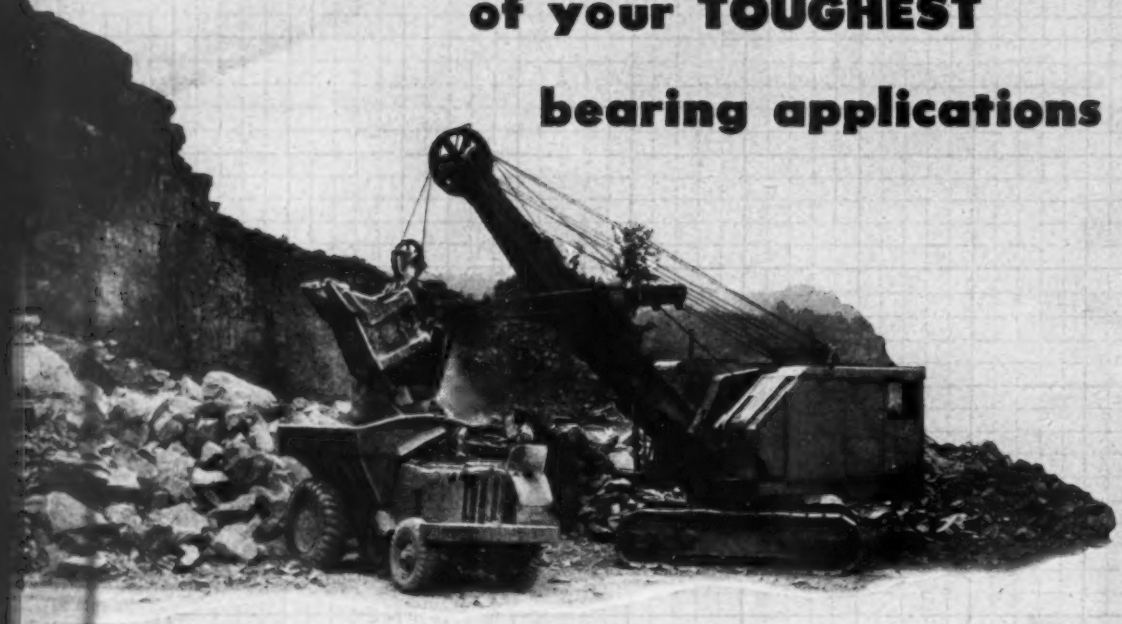
CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

You can better the service record of your TOUGHEST bearing applications



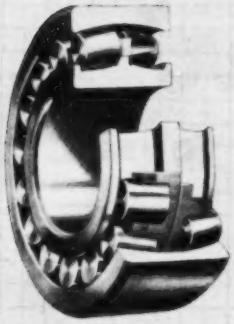
The ability of Torrington Bearings to better any previous performance and service record can be demonstrated . . . on your own equipment

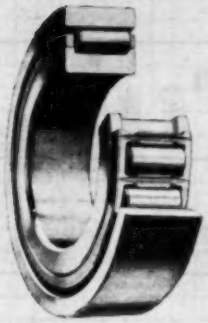
The Koehring power shovel above, and the Barber-Greene crusher opposite, are only two of many "proving grounds" where Torrington Bearings are giving daily proof of their ability to deliver top performance per dollar invested.

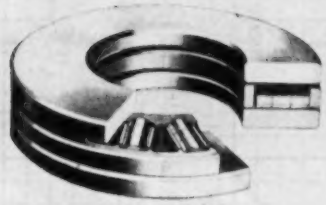
You can prove this for yourself by a trial of Torrington Bearings in your own equipment, under conditions you can watch.

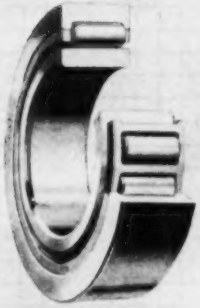
Select your toughest anti-friction bearing application. Call in a Torrington service engineer for recommendations—and then watch efficiency go up and maintenance go down.

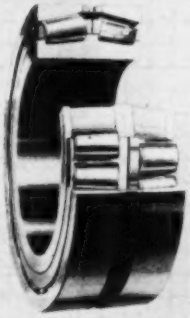
TORRINGTON











Here is why Torrington Bearings will improve the performance of your equipment

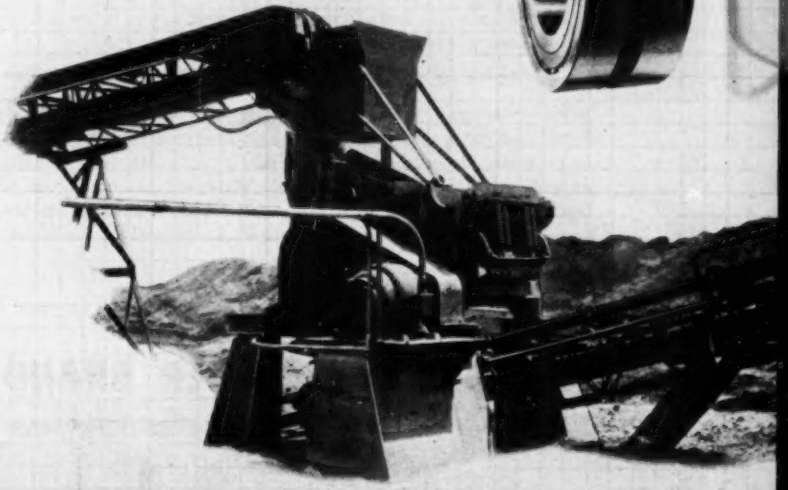
We stint on no detail to make Torrington Bearings the best for your money. They are designed and manufactured with the precision and metallurgical properties that mean longer service life in the most exacting application. And they are backed by the service of a firm that has worked with *all* major types of anti-friction bearings, and knows the problems of design and operation of construction machinery.

That is why we can recommend exactly the right bearing for your toughest application. The proof is in the demonstration—in your equipment under field operating conditions. Arrange a trial now. A phone call or letter will get it under way.

THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada



SPHERICAL ROLLER
TAPERED ROLLER
STRAIGHT ROLLER
NEEDLE
BALL
NEEDLE ROLLERS

BEARINGS

How to pick the "Winner" for tough wire rope jobs!

SHOVEL ROPE—Tiger Brand 6 x 41 Lang Lay with Independent Wire Rope Core. Made only in Monitor grade. Has high abrasion and fatigue resistance. The wire core adds to its strength and prevents distortion. This Tiger Brand Rope has earned an enviable reputation where the digging is hardest.

• You can make money or lose it by the way you select wire rope. It's good to pick a rope like American Tiger Brand—that has proved its merits over a period of years—but that's only part of the story.

Some types of ropes are good in mud and sand—others are not. Some can stand bending fatigue caused by small sheaves, others break up under this abuse. The point is—can *you* tell by looking at a rope whether or not it will be a "winner" on your job?

Take a tip from the Tiger Brand Specialist

Here's a man who knows his ropes. He can tell you the construction that should be best for your particular needs. Don't hesitate to call him in. He has the experience to help you pick a winner . . . and the right rope for your job can cut your wire rope costs in half. Write for our handbook, "American Tiger Brand Wire Rope" which shows all the different constructions. Address American Steel & Wire Company, 842 Rockefeller Bldg., Cleveland 13, Ohio.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE UNITED STATES STEEL

USS

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

The JOY Champion sets absolutely new standards in blast-hole drilling. Months of operation in field after field have proved that it drills many times faster, and at far lower cost per foot, than any other drill on the market. Here's why . . .

REVOLUTIONARY DESIGN: The Champion Drill continuously pressure-cuts the rock with a rotating, tri-cone roller bit. It operates quietly, no deafening hammer strokes.

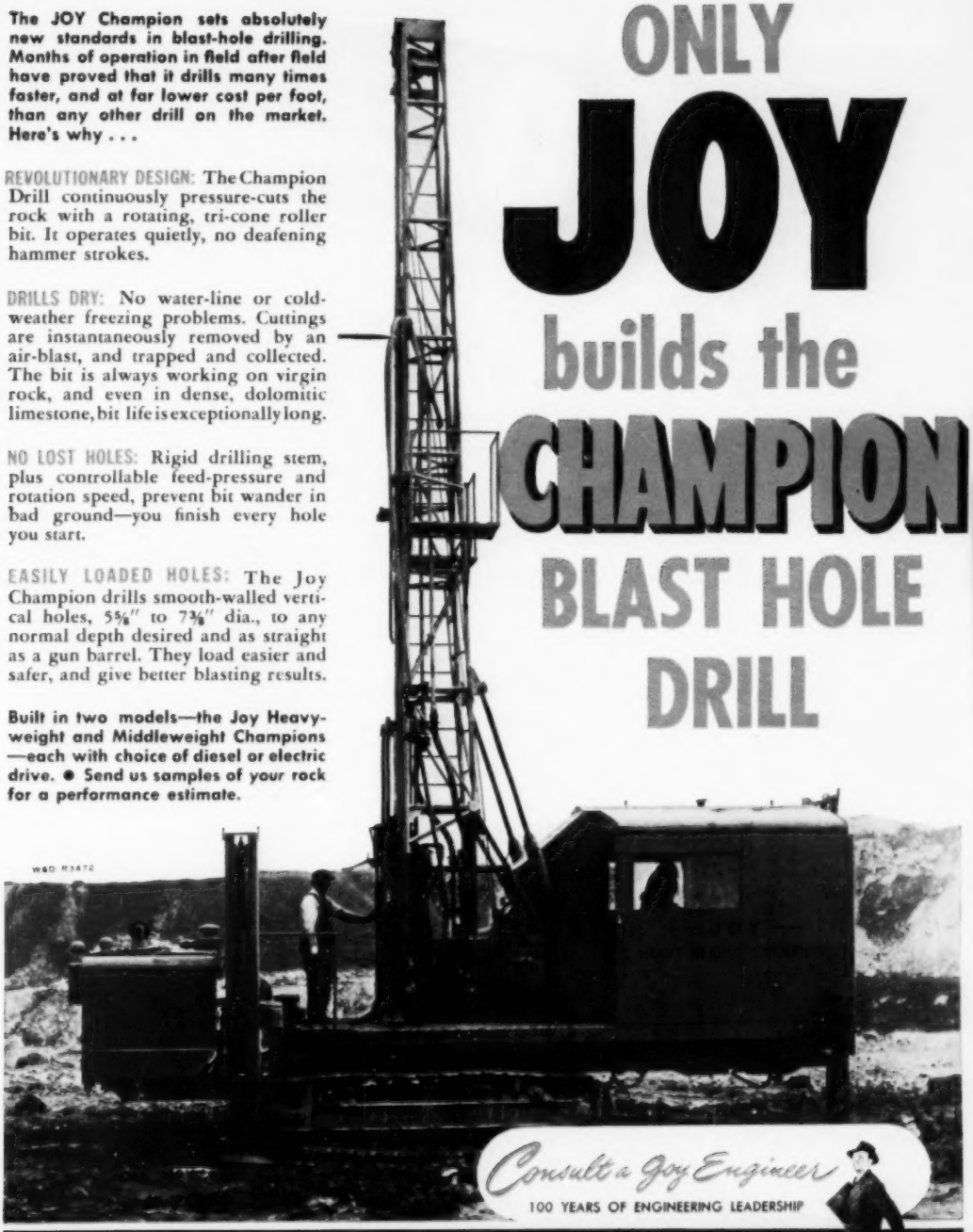
DRILLS DRY: No water-line or cold-weather freezing problems. Cuttings are instantaneously removed by an air-blast, and trapped and collected. The bit is always working on virgin rock, and even in dense, dolomitic limestone, bit life is exceptionally long.

NO LOST HOLES: Rigid drilling stem, plus controllable feed-pressure and rotation speed, prevent bit wander in bad ground—you finish every hole you start.

EASILY LOADED HOLES: The Joy Champion drills smooth-walled vertical holes, 5⅝" to 7⅞" dia., to any normal depth desired and as straight as a gun barrel. They load easier and safer, and give better blasting results.

Built in two models—the Joy Heavyweight and Middleweight Champions—each with choice of diesel or electric drive. ● Send us samples of *your* rock for a performance estimate.

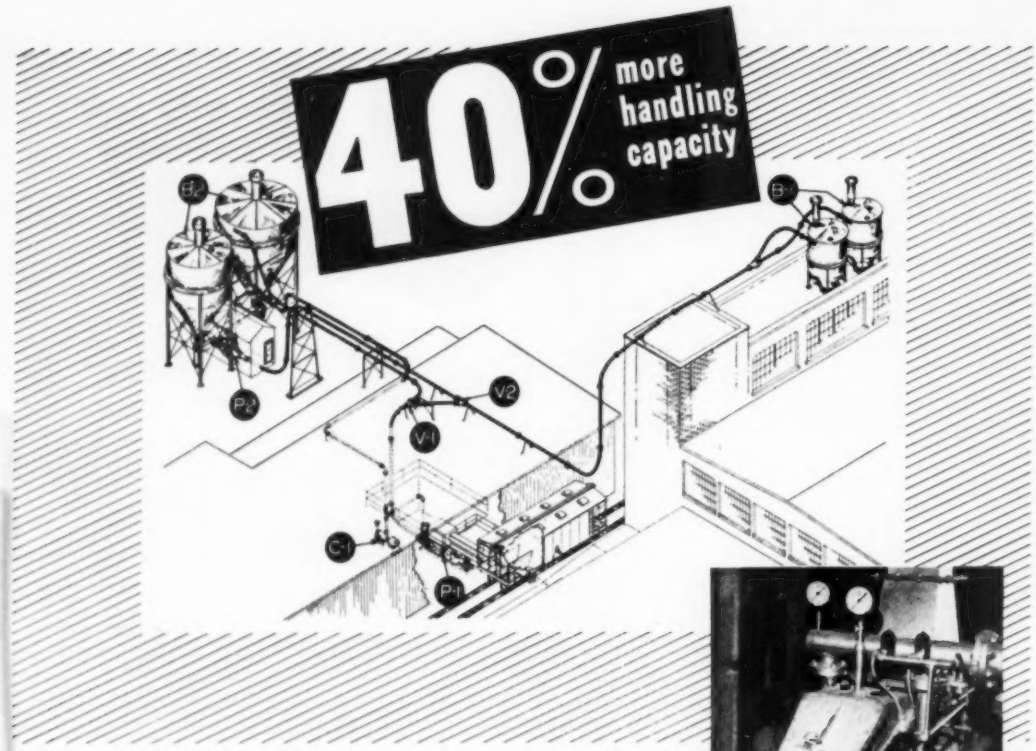
ONLY JOY builds the CHAMPION BLAST HOLE DRILL



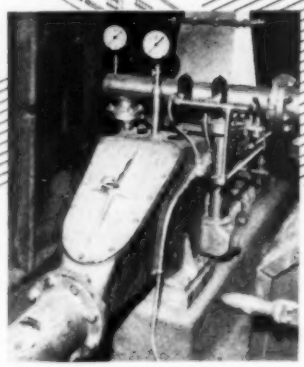
JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO



Materials are unloaded (P-1) from hopper-bottom cars to a Fuller-Kinyon Pump, and conveyed through the use of a two-way diverting valve (V-1) and V-2) direct to process bins (B-1) or to reserve storage bins (B-2). A second Pump (P-2) conveys materials from the storage bins to process bins. A Fuller Rotary Single-stage Compressor (C-1), 282 cfm., 25 psi., furnishes the necessary air.



WITH A FULLER-KINYON CONVEYING SYSTEM

Flintkote's asbestos shingle plant at East Rutherford, N. J. uses great quantities of Portland cement and other pulverized material. Unloading and in-plant moving of these raw materials was one of the costliest handling jobs the company had.

That is, until a Fuller-Kinyon Conveying System was installed. Flintkote's been profiting from that investment ever since! Before, three men and a truck driver were needed to unload one railroad car. *NOW one man controls the whole system.* Before, bulky sacks and skids took up badly *needed room. NOW 3200 square feet of former storage space is available for other purposes.* The new system has increased handling capacity 40 percent . . . nearly paid for itself in just three years!

Your plant may be equally adaptable to efficient pneumatic unloading and conveying. Why not have our engineers analyze your requirements . . . recommend the most efficient and economical system. No obligation, of course.

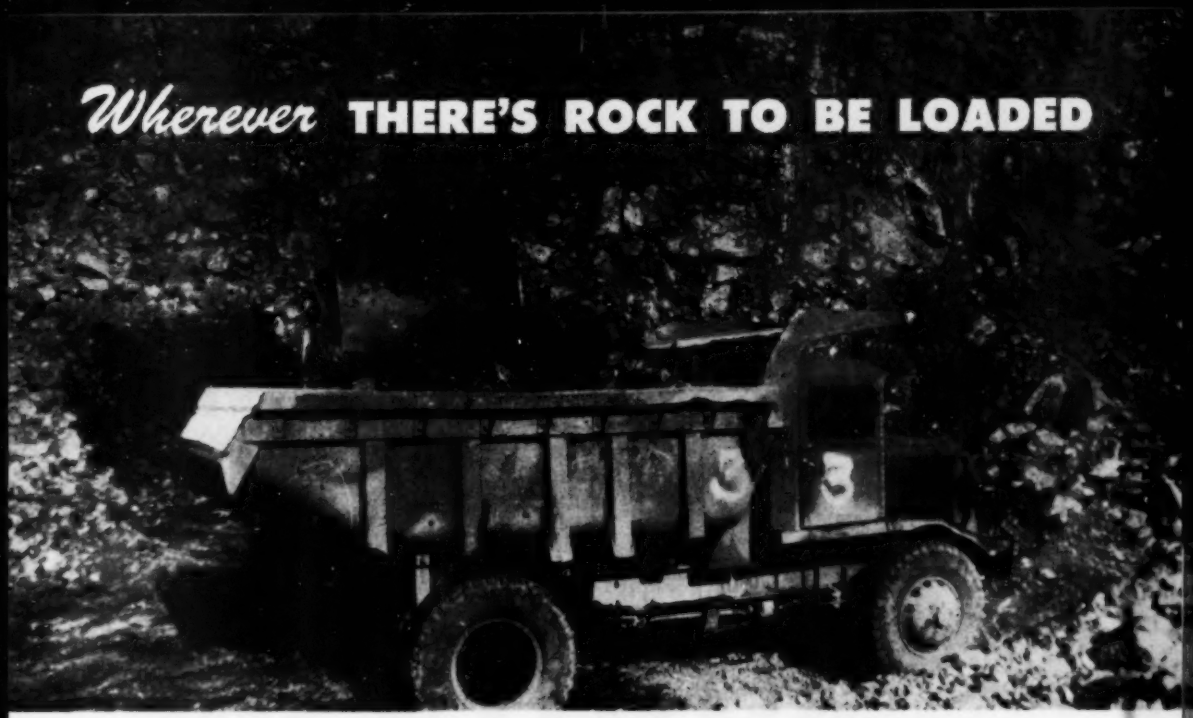
fuller

FULLER COMPANY, Catasauqua, Pa.
Chicago 3 • 120 S. LaSalle St.
San Francisco 4 • 420 Chancery Bldg.

DRY MATERIALS CONVEYING SYSTEMS AND COOLERS
COMPRESSORS AND VACUUM PUMPS
FEEDERS AND ASSOCIATED EQUIPMENT

P-125

Wherever THERE'S ROCK TO BE LOADED



Eimco RockerShovels have been known as good rock loading machines ever since the first machine was produced. Now over 6,000 of these installations operate in rock everyday — they're the equipment used when the going gets rough.

The 104, shown here, is loading rock with its 1¼ yard* bucket at the rate of 4 to 5 yards per minute. It's a heavy-duty, fast, dependable machine, saving contractors and rock handling companies money on every job.

Write for information on this versatile rock loading machine.

***Larger buckets for lighter materials.**

A804

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES : SALT LAKE CITY 10, UTAH, U. S. A.

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NEW YORK, 51-52 SOUTH STREET + CHICAGO, 3319 SOUTH WALLACE STREET
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EL PASO, TEXAS, WILLS BUILDING + BERKELEY, CALIFORNIA, P. O. BOX 240
KELLOGG, IDAHO, 307 DIVISION STREET

IN FRANCE, SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND, EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

ANNOUNCING...

The NEW SHELL ROTELLA OIL

(Extra Heavy Duty Type)

"... exceeds every accepted performance standard for oils in its class"

OUTSTANDING PISTON CLEANLINESS

The new Shell Rotella Oil stands out in the very top bracket with respect to Piston Cleanliness, providing convincing proof of its ability to keep contaminants out of the critical zone in which wear is concentrated.

MUCH LOWER RING DEPOSITS

Ring-plugging tests are really tough, yet new Shell Rotella Oil came through stiff competition with a remarkably low ring deposit rating . . . far below the established passing mark!

GREATER ENGINE LIFE

Recognized laboratory engine tests are important in establishing qualifications of lubricants to meet strict requirements. More important to operators, however, is the *tremendous increase in engine life* and the consequent reduction in maintenance expense and time out-of-service that the new Shell Rotella Oil is contributing to fleet operation under today's conditions.

NEW SHELL ROTELLA OIL . . .

Stepped up cleaning action...

Even greater anti-wear protection

. . . anticipating the needs of today's high performance fleet engines

TODAY'S hauling conditions are imposing greatly increased demands upon fleet engines . . . and the lubricants selected to keep them running. At the same time these high-performance engines are expected to turn in ever-increasing mileage records between overhauls.

For these reasons, and because even greater performance will probably be expected as time goes on, the detergent-dispersant and anti-wear qualities of Shell Rotella Oil have been markedly increased.

Operators using Shell Rotella Oil in the past will find an even greater latitude in maintenance procedures.

4-WAY LIFE EXTENSION FOR BUSY ENGINES

1. Remarkable detergent-dispersant action

The ability to suspend contaminants has been deliberately stepped up in the new oil. Field tests on vehicles, in widely varying kinds of service, prove conclusively that this greater detergent-dispersant action extends mileage between overhauls.

2. Drastic sludge reduction

Operators who have been having sludge troubles . . . with clogged pump screens, burned out bearings, or clogged oil ways . . . are urged to find out for themselves how remarkably clean those engines will remain while using this new anti-sludge Shell Rotella Oil.

3. Positive Anti-acid action

New Shell Rotella Oil directly counteracts the acid action of fuel combustion products in the vital top-cylinder zone . . . with correspondingly great reduction in wear. This protection is extremely important in the operation of intermittently loaded engines.

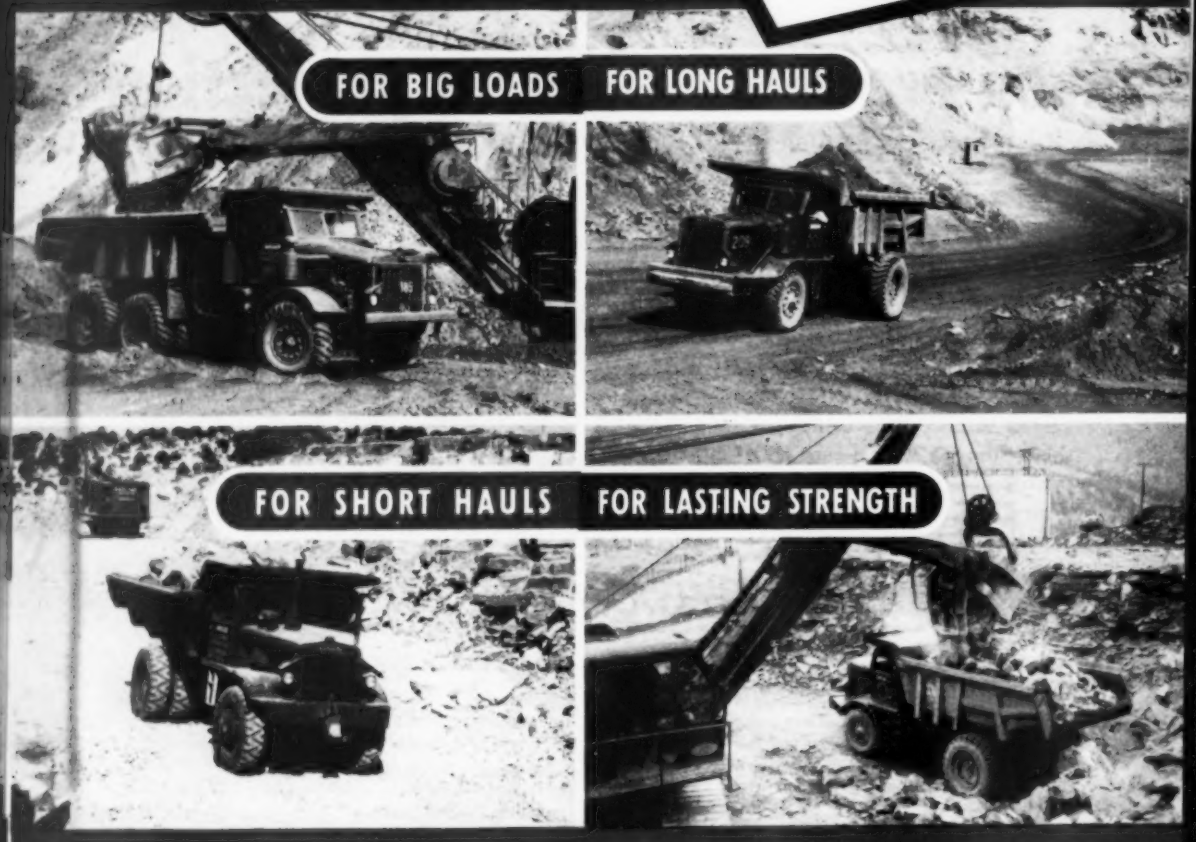
4. Extends time between engine overhauls

New or reconditioned engines . . . operating on fuels of widely-varying quality . . . in all kinds of fleet service . . . have demonstrated an important extension of in-service time. *This gain results from improvement in several basic respects: freedom from sludge and ring-clogging, increased valve life and greatly reduced wear.*

SHELL

for all heavy duty fleet engines

"EUCS" Are Your Best Bet!



Because of their rugged construction and dependable performance, Rear-Dump Euclids are standard equipment on hundreds of mine, quarry, and construction jobs. For moving rock, ore, overburden and other heavy excavation, "Eucs" have the capacity and speed to haul bigger loads faster and at lower cost per ton or yard moved.

Look at the record! Of the thousands built, nine out of eleven Euclids are still in use today! They're job proved . . . have earned their reputation for staying power, low-cost production and efficient operation on a wide range of work.

Owners know from experience that they can depend on prompt, efficient service from Euclid's world-wide distributor organization.

Euclids are your best bet for more loads per hour and more profit per load. Write for information on the complete line of Euclid equipment, or call your Euclid Distributor today.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

EUCLIDS *Move the Most*

Economy, Quality, Quantity...

MINIMUM MAINTENANCE and low operating costs of all Traylor Grinding Mills are assured by all-welded steel shell . . . trunnions and gear flanges turned and faced *on the shell* . . . generous bearing surfaces.

GREATER PRODUCT UNIFORMITY is obtained with a Grinding Mill "Traylored" to your specifications. Traylor Grinding Mills reduce overgrinding to a minimum . . . assure uniform particle size with very few fines.

MAXIMUM PRODUCTION is the net result of a Traylor Mill's extreme efficiency and dependability of operation. Whether you measure in tons or dollars . . . quantity or quality . . . you can produce more with a Traylor Grinding Mill.

Traylor Grinding Mills
Meet All Three Production Essentials

Traylor Grinding Mills enjoy a wide reputation for the economical production of large quantities of uniform, granular material. All Traylor Rod Mills, Ball Mills and Compartment Mills are accurately built to specifications developed from complete data furnished by the customer himself. It will pay you to discuss your grinding problem with a Traylor engineer. His recommendation will be based on Traylor's 40 years experience building efficient grinding equipment.

THIS COUPON WILL BRING
the answer to your grinding problem. Fill it out and mail it today.

TRAYLOR ENGINEERING & MANUFACTURING CO.
338 MILL ST., ALLENTOWN, PA.

I want to hear more about reducing grinding costs with a Traylor mill.

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Jaw, Reduction and Gyratory Crushers · Crushing Rolls

Arctic Mine doubles

Sydvaranger, A/S is moving 25 million yards of rock with 12 LeTourneau 40-ton rubber-tired haul units

At Kirkenes, Norway, 215 miles north of the Arctic Circle, approximately 25 million yards of rock are to be removed to uncover magnetite ore. Deepest point of excavation in the vast, open-pit mine will be about 350 feet below the ground surface. Ultimate production goal is 2.3 million tons of ore annually. This calls for removal of 12,000 tons of rock overburden and iron ore every 24 hours, year-around, in temperatures which range from 86° F. above zero to 31° below.

To achieve quickly and maintain this heavy production schedule, Sydvaranger, A/S, well-known firm from Oslo, Norway, assigned all hauling to a fleet of 12 LeTourneau big-capacity, rubber-tired Tournarockers. Carrying approximately 40 tons of rock each trip, these giant, rear-dump trucks haul from shovel to crushing plant at high speeds, dumping their loads at a touch of an electric switch. At start of operations, Sydvaranger originally brought in 6 of these modern hauling units, finding their performance so dependable and satisfactory, they added 6 more.

The enterprising Norwegian firm has also modernized pit and haul road maintenance with 2 LeTourneau high-speed Tournadozers (illustrated right). These mobile Bulldozers, rolling on giant tires, travel at speeds up to 19 m.p.h. They built the main haul road from mine to crushing plant, and handle clean-up around all shovels in the pit.

To you, this advanced earthmoving equipment can also mean lower costs and increased production on your mining operations. See your nearest LeTourneau Distributor, or write us direct for complete information on high-speed Tournadozers and rear-dump Tournarockers. In addition to 40-ton size, revolutionary Tournarockers are also available in 35-ton, 16-ton and 9-ton sizes. Tournarocker prime movers can also be used to power Carryall Scrapers, bottom-dump wagons, cranes, flat-beds, and other auxiliary interchangeable hauled units, thus assuring you of continuous profitable operation. Investigate TODAY.

LET

Mail today to: **R. G. LeTOURNEAU, INC., Peoria, Illinois**

NAME _____ TITLE _____

COMPANY _____ Dept. or Div. _____

STREET _____

CITY _____ STATE _____

Send us specs., price and performance data on

☐ 35-ton or larger Tournarockers
☐ 16-ton ☐ 9-ton

☐ Also send facts on 180 h. p., rubber-tired Tournadozer.

TOURNAROCKER fleet

Hauls rock—At Kirkenes, all hauling from stripping shovel to crusher was assigned by Sydvaranger, A/S, to their twelve 40-ton Tournarockers.

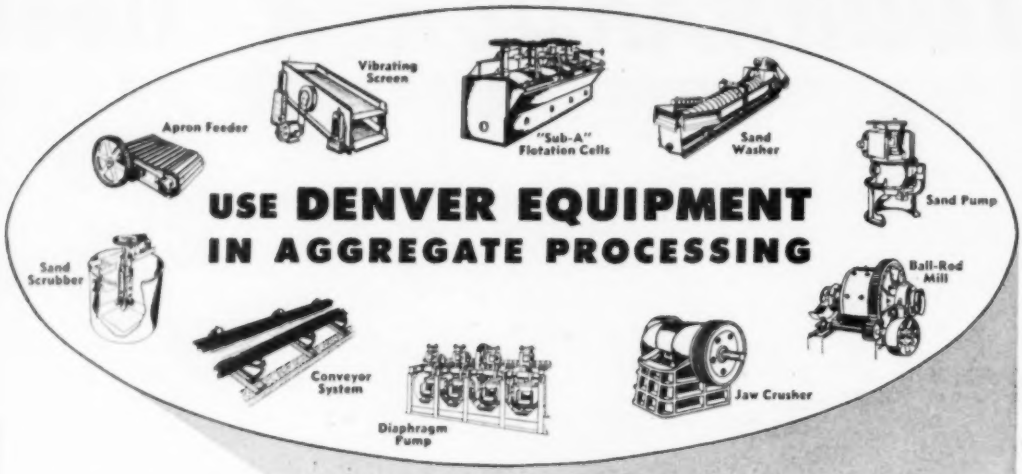
Handles clean-up—This high-speed Tournadozer is one of 2 in use for shovel clean-up and haul road maintenance in the Norwegian iron mine.

Tournarocker—Trademark Tournadozer, Carryall Trademark Reg. U.S. Pat. Off.

LETOURNEAU TOURNAROCKERS

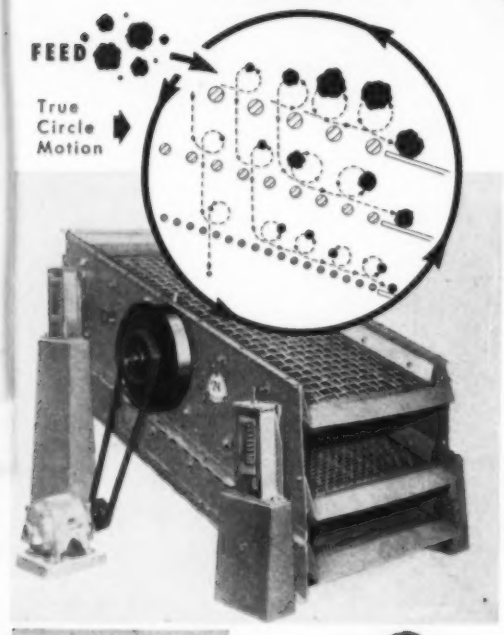
PEORIA, ILLINOIS

TRACTION ADVANTAGES of A CRAWLER PLUS HIGH-SPEED on RUBBER



less fines in classified aggregate by using the

DENVER · DILLON Vibrating Screens



Better Cleaning . . . Less Penalty . . . More Profit. Material literally comes straight down hundreds of times over the complete area of the fully activated screen so that every particle of undersize passes through the screen. Result is a minimum of undersize in every sized product.

Circle Throw Eccentric More than Vibrates the Screen. The true circle motion lifts each particle up, back and directly down onto the screen cloth. Material more than flows across the screen . . . hundreds of times it moves up, back and down so that every particle of undersize passes through.

Result . . . a cleaner product . . . less penalty . . . more profit.

With the Denver Dillon Screen *you also get . . . Two Bearing Suspension . . . Fifty Percent Less Horsepower Consumption . . . Minimum Maintenance . . . No Blinding of Screen Cloth . . . and many other features.*

Want more information on this super screen?

Write today for Bulletin S3-B5, giving us some idea of your screening problem. You will receive a prompt reply and a solution.

FLOTATION ENGINEERS

DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

"The firm that makes its friends happier, healthier and wealthier"

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DENVER EQUIPMENT COMPANY, 1408 17th St., Denver 17, Colorado

Best-Telling Book

CONTENTS:

WHAT LUBRICANTS FOR WHAT APPLICATIONS —AND WHY

YOUR TYPE of construction equipment—engines included—is plainly, soundly covered in this book. You'll be able to judge for yourself which types of lubricant best suit various machines and conditions. You can make your own point-by-point check-up on the complete line of Cities Service lubricants—engineered in types and grades sure to be more than a match for fierce loads, weather and terrain. The performance records prove how sharply maintenance costs go down... how steadily grueling schedules are met... with Cities Service lubricants on the job. Call the nearest Cities Service office for competent aid, or write us direct.

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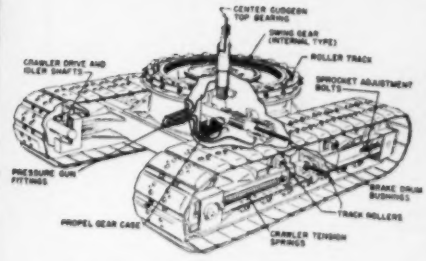
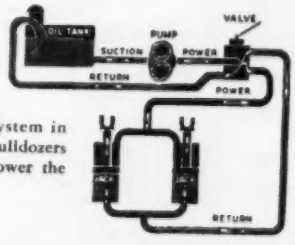
Compressor Oils Hydraulic Oils
Multi-Purpose
GEAR OILS
HEAVY DUTY MOTOR OILS



"FIG. 23

Shows internal type open gears of swing rack and one method of lubricating trunion and other shaft bearings... The 'propel' gears are enclosed and oil lubricated. The crawler track and other parts lubricated through pressure gun fittings require grease. See lubrication chart for proper type and grade..."



"FIG. 33

Hydraulic system in use on some bulldozers to raise or lower the blade."

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Sixty Wall Tower, Room 1072, New York 5, N. Y.

Please send me without obligation your new book, "Earth Moving and Construction Machinery Lubrication."

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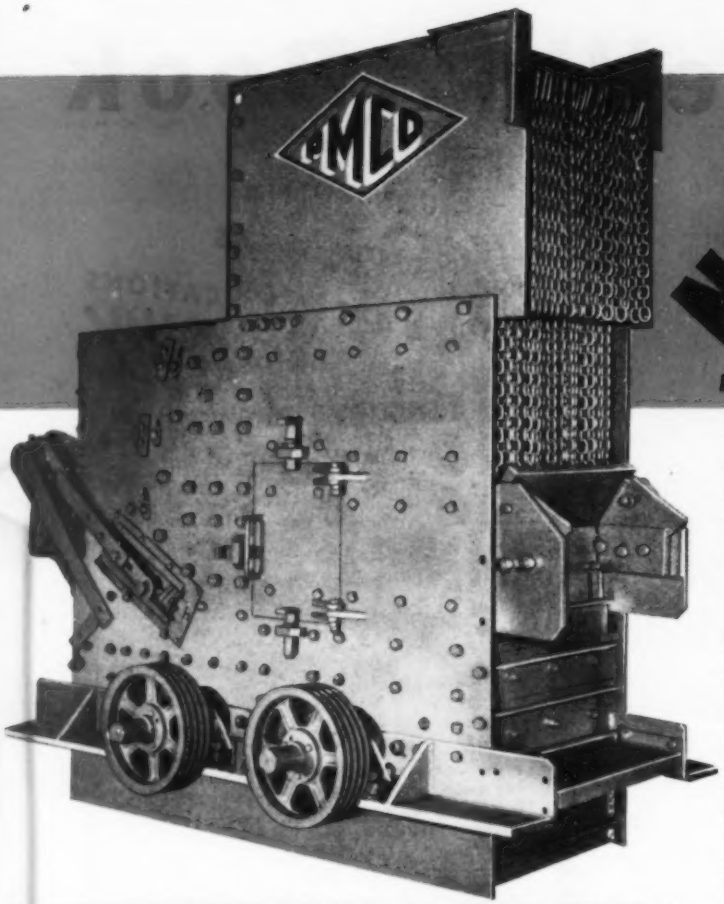


NOW GET

MODEL 3240 IMPACT MASTER

Heavy duty construction throughout. Weighs 34,000 lbs. Gives you up to 250 tons per hour minus 2½" with 125 to 150 horsepower in average gray limestone. Produces 125 tons per hour minus 1" in many types of rock. Reduces material up to 50" long that will pass freely through its 32" wide x 40" high feed opening to specification size in one operation. Two heavy rotor hammers rotate in the same direction at speeds from 550 to 1000 rpm on 5-15 16 diameter special steel shafts. Three-way adjustment for finished product size. Available on skids, or combined with auxiliaries as complete portable or stationary units for operation in open or closed circuit.

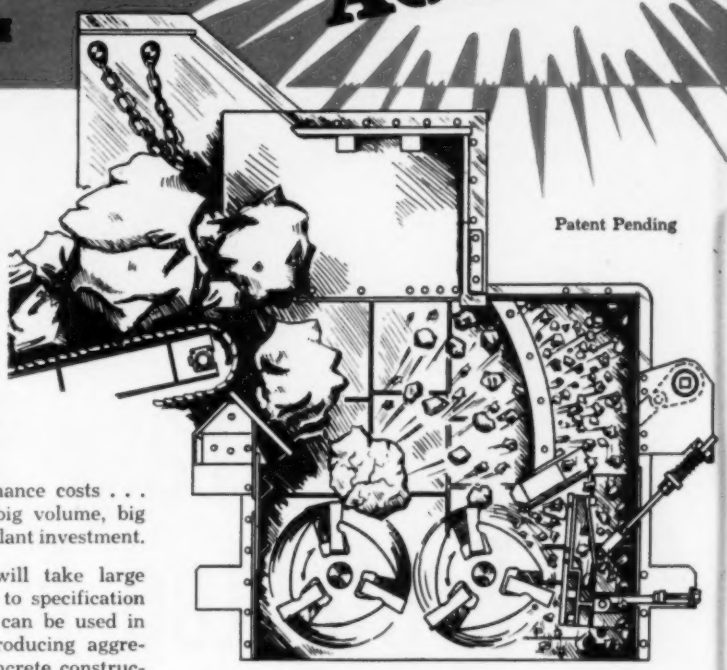
Proved Performance

Model 3240 Impact Master operating since April, 1950 in road rock - aglime setup at River Products Quarry, Iowa City, Iowa. Well over 100,000 tons of minus 2½" have been produced with no maintenance on wearing parts. Output is fed to screen with oversize going to a No. 5 Universal Hammermill.

STEP INTO BIG VOLUME, BIG PROFIT OPERATIONS AT LOWEST PLANT INVESTMENT WITH PMCO CONTROLLED IMPACT ACTION

ALL 3 WITH CONTROLLED IMPACT ACTION

PEAK TONNAGE
LOWER COSTS
BETTER QUALITY
CUBICAL AGGREGATE



Patent Pending

Controlled Impact Action

. . . . the exclusive operating principle of the PMCO Impact Master is here to give you peak tonnage of better quality finished material at lowest cost per ton. It makes possible a ratio of reduction that eliminates the need for much accessory equipment, cuts power, labor and maintenance costs . . . enables you to step into the big volume, big profit picture with a minimum plant investment.

The PMCO Impact Master will take large quarry material and reduce it to specification size in one fast operation. It can be used in open or closed circuits for producing aggregates for road building and concrete construction, and can be adjusted for the simultaneous production of aglime in profitable percentages when desired. It cuts costs in reducing many types of non-abrasive and low silica content materials, and operates at high speed efficiency in wet sticky materials that slow down production in conventional machines. Models are available with capacities up to 500 tons per hour. Investigate the PMCO Impact Master now! Get the field-proven story of Controlled Impact Action. Write for illustrated literature.

Clean, cubical aggregate is produced by the terrific impact of rigidly mounted revolving rotor hammers intercepting rock in motion. By controlling the infed rock and directing its flow, practically 100% of the breaking is accomplished by the rotor hammers, making it possible to better control finished product size. There is no attrition, no rubbing, no grinding. Finished material is immediately discharged from the breaking chamber. As a result you get greater capacity at lower horsepower per ton, a more uniform gradation cubical aggregate . . . . . greater finished product control.

PETTIBONE MULLIKEN CORPORATION

Construction Equipment Division

4700 West Division Street, Chicago 51, Illinois
Phone SPaulding 2-9300

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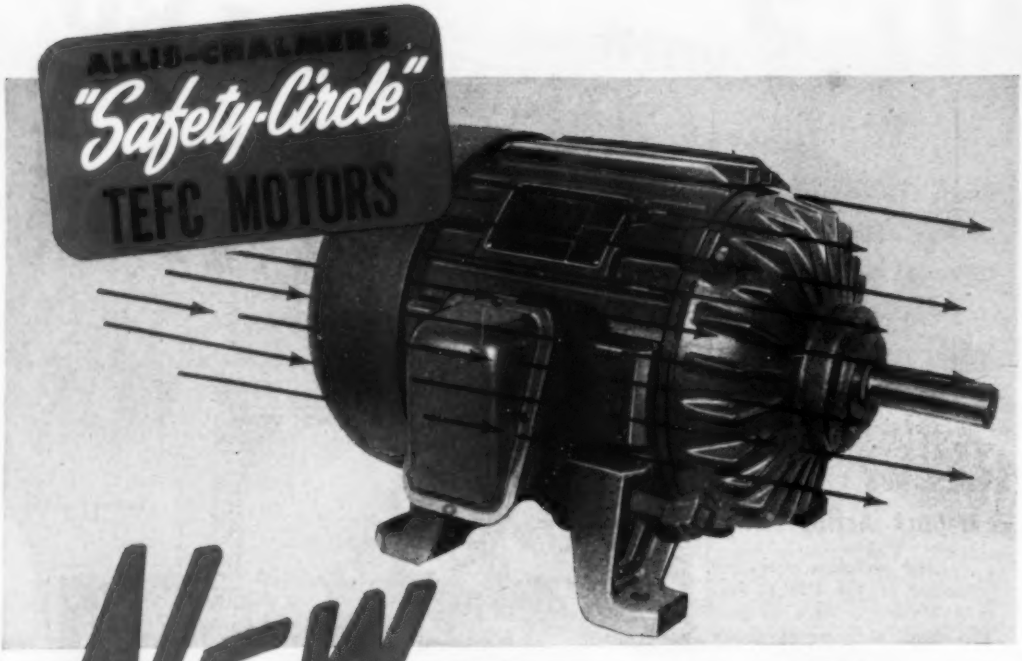

NEW Easy to Clean Protected From Dirt

THIS NEW *Safety Circle* totally-enclosed, fan-cooled motor cannot clog with dirt. The ribbed cooling surfaces are outside the motor. There are no pockets or crevices where dirt can collect. Cooling air is not enclosed at any point except the fan cover.

Cleaning is the simplest of maintenance operations done in a few seconds with an air hose. The fan cover also can be removed very quickly for a thorough cleaning.

Factory Lubricated Bearings

Bearings are lubricated at the factory and operate without attention or cost for years. The frame of this *Safety Circle* TEFC motor is cast iron, inherently corrosion resistant, strong and rigid. The extra rigidity of the cast iron frame holds the bearings in true alignment under severe operating conditions. This gives long bearing life and low operating costs.

Get All The Facts

The new *Safety Circle* totally-enclosed fan-cooled motor is built in all NEMA standard frame sizes from 224 to 505. Your Allis-Chalmers Authorized Dealer or Sales Office has complete information. Call today or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B6144. A-3235

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems

TEXROPE — Belts in all sizes and sections, standard and *Vari-Pitch* sheaves, speed changers.

PUMPS — Integral motor and coupled types from ⅜ in. to 72 in. discharge and up.

Safety Circle, Texrope and *Vari-Pitch* are Allis-Chalmers trademarks.

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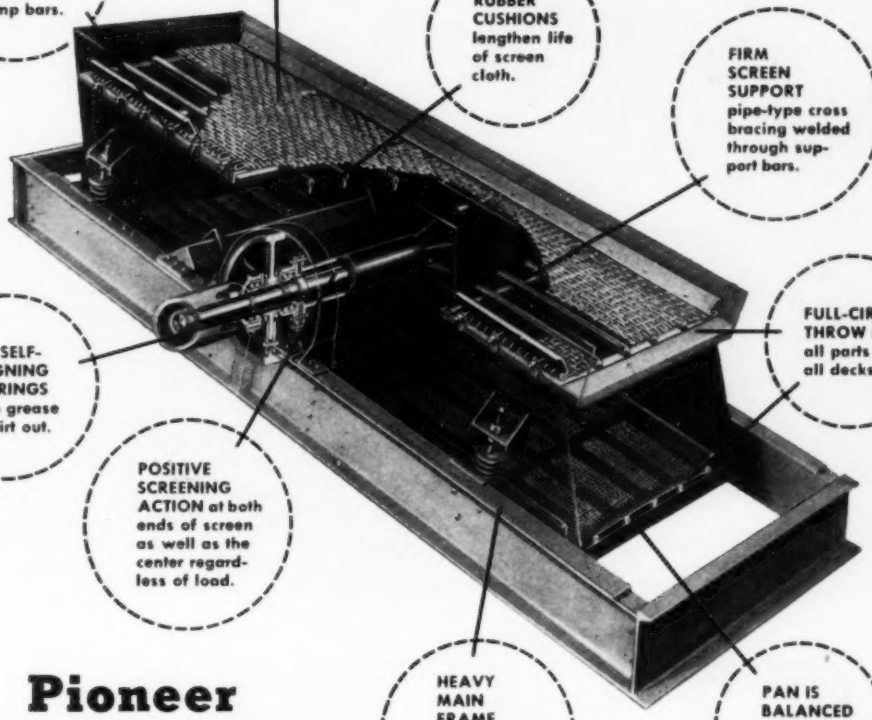
Engineered

FROM THE INSIDE OUT

for Higher Output, Lower Upkeep!



CROWNED SCREEN spreads material, prevents sagging

SCREENS QUICKLY CHANGED or tightened —with clamp bars.

RUBBER CUSHIONS lengthen life of screen cloth.

FIRM SCREEN SUPPORT pipe-type cross bracing welded through support bars.

FULL-CIRCLE THROW in all parts of all decks.

SKF SELF-ALIGNING BEARINGS keep grease in, dirt out.

POSITIVE SCREENING ACTION at both ends of screen as well as the center regardless of load.

HEAVY MAIN FRAME cross-braced with two plates under bearings.

PAN IS BALANCED end for end, top against bottom.

Pioneer VIBRATING SCREENS

are made in 3'x6', 3'x8', 3'x10', 4'x8', 4'x10', and 4'x12' sizes with two, three or four decks . . . also in tandem.

BUY BOTH!

Higher Output, Lower Upkeep!

New Booklet!

PIONEER ENGINEERING WORKS

1515 Central Avenue • Minneapolis 13, Minnesota

Please send me complete information about PIONEER Vibrating Screens.

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City _____ State _____

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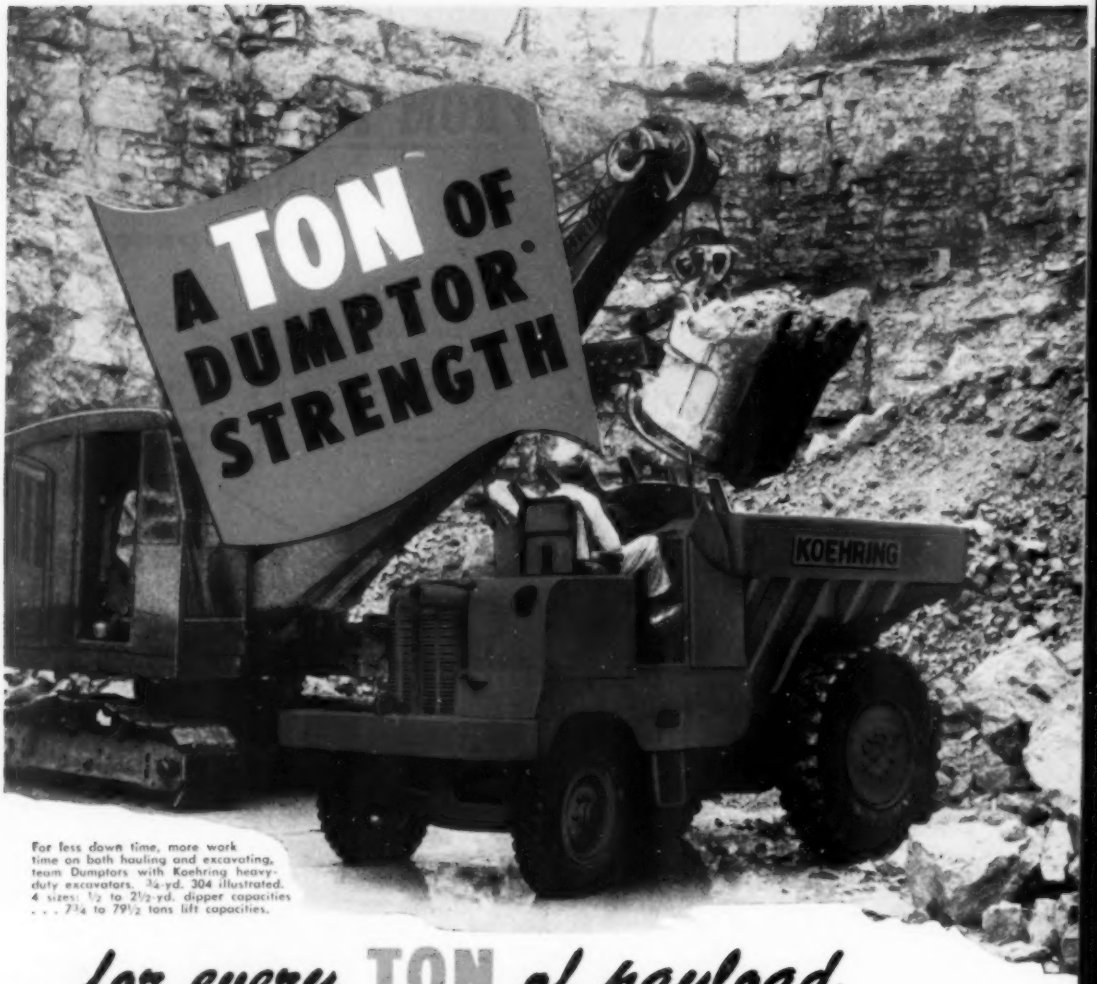
Continuflo **EQUIPMENT**



For less down time, more work time on both hauling and excavating, team Dumptors with Koehring heavy-duty excavators. ¾-yd. 304 illustrated. 4 sizes: ½ to 2½-yd. dipper capacities . . . 7¾ to 79½ tons lift capacities.

. . . for every TON of payload

Dumptors stand up under the severest shocks of shovel-loading 1½ to 2½ yards of rock at a pass because they're built extra tough for rock handling. There's more than a ton of net vehicle weight for every ton of payload.

All-welded body, sides, ends and bottom are heavily reinforced with 4" channel ribs. More than triple strength has been built into the bottom . . . seasoned 1⅝" oak timbers are securely bolted between two layers of 5/16" steel plate. Steel-oak-steel construction cushions shocks of rock loading. Free-swinging, kick-out pan adds another tough 3/16" high-manganese steel plate for extra protection. Dumptor also has: rugged main frame, 8" ship-channels, heavily trussed . . . one-piece steel drive-axle housing and transmission case . . . 4" chrome steel drive axles . . . cast alloy steel "I" beam steering axle. All add extra strength to Dumptor chassis.

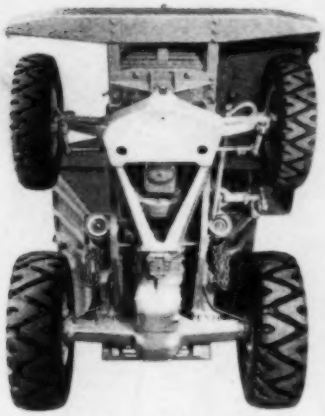
Heavy-duty construction like this assures you that Koehring 6-yard Dumptors will stand up under your toughest assignments . . . that there will be little down time with Dumptors on your job. For complete facts, see your Koehring distributor today.

CK12.8

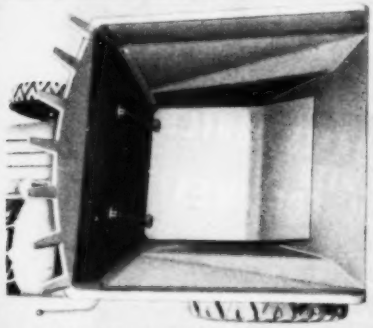
KOEHRING HEAVY DUTY

KOEHRING DUMPTOR

KOEHRING COMPANY, MILWAUKEE 16, WIS. • SUBSIDIARIES: • KWIK-MIX • PARSONS • JOHNSON



NO "SOFT SPOT" on Dumptor's underside . . . 1-piece, cast steel housing protects drive axle and enclosed chain drive. Wishbone supports the skid plate . . . shields the radius rod and the engine crank case . . . and supports the oscillating steering axle.



KICK-OUT PAN adds an extra 3/16" high-manganese steel plate on top of sturdy Dumptor bottom . . . breaks suction of sticky materials for fast, clean dump. Big 8' x 8' top gives easy-to-hit target for fast loading over the side or end . . . with less spillage.

1-SECOND GRAVITY DUMP . . . no slow-acting body hoists . . . no body-hoist maintenance . . . plus same speeds forward and reverse for no-turn shuttle hauling keep production yardage high, costs low with Dumptors.

JOHNSON Concentric Batchers Give You Central Cement Feed

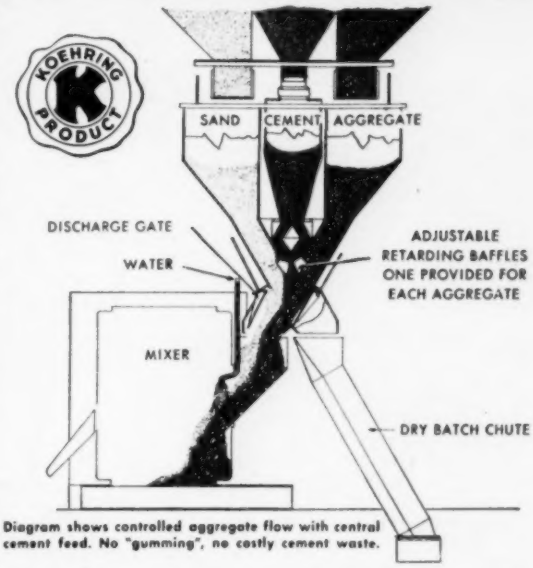
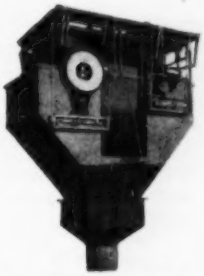


Diagram shows controlled aggregate flow with central cement feed. No "gumming", no costly cement waste.

Only with the Johnson patented Concentric Aggregate-Cement Batcher can you get all of these advantages for fast, efficient, economical operation:

1. Centralized control provides easy and fast operation.
2. Fast batcher charge and discharge reduces batch cycle time.
3. All ingredients are intermingled as they flow through discharge.
4. Materials pre-shrunk, dusting reduced.
5. "Gumming" is eliminated.
6. Cement, concrete's most expensive ingredient, is weighed on separate scale in individual centrally located cement batcher and further protected from loss by concentric arrangement of aggregates around the cement batcher discharge.
7. Adjustable rate of discharge of each aggregate from batcher gives better control of ribbon feeding.
8. Dual discharge is available . . . no separate collecting cone.
9. Extra steep slopes prevent hang-up.

Let your Johnson distributor show you how these features can increase your plant production . . . and lower costs.

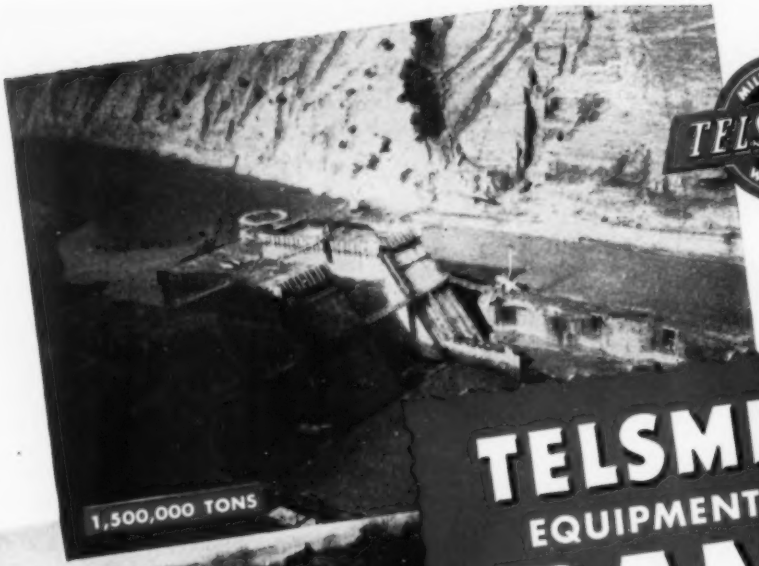


Aggregates are controlled by either beam or dial accumulative scales; cement is weighed on separate scale.

C. S. JOHNSON COMPANY

KOEHRING SUBSIDIARY • CchampaIGN, ILLINOIS

W 2



MILWAUKEE TELSMITH WIS. U.S.A.

Mount Morris Dam, N. Y. The 300-350 tons per hour rock crushing plant is Telsmith designed and equipped.

TELSMITH® EQUIPMENT FOR DAMS

Philpott Dam, Va. Here, too, the crushing-screening equipment is Telsmith.

● Huge dam projects and Telsmith Aggregate Plants go together. Many dam builders call in Telsmith engineers for consultation as to the proper plant layout and the right equipment to use. Then Telsmith makes the detailed drawings for the erection of the plant and furnishes most of the machinery. Telsmith designed plants have proven their efficiency on many large projects and Telsmith equipment has a world-wide reputation for the production of low-cost aggregate. The ruggedness of Telsmith equipment is strikingly demonstrated by long life in severest service, on successive projects. After producing 1,500,000 tons of aggregate at Center Hill Dam, the same Telsmith equipment is now turning out about the same amount of aggregate at Buggs Island Dam.

Save time and money. Consult Telsmith Engineers.

MP-8

Ask for Bulletin 266.

OTHER DAMS BUILT WITH TELSMITH EQUIPMENT

- Alatoona Dam, Georgia
- Boysen Dam, Shoshoni, Wyo.
- Buggs Island Dam, Virginia
- Carpenter Dam, Arkansas
- Cascade Dam, Washington
- Center Hill Dam, Tennessee
- Clark Hill Dam, Augusta, Ga.
- Conowingo Dam, Conowingo, Md.
- Dale Hollow Dam, Tennessee
- Davis Dam, Nevada
- El Presidente Dam, Mexico
- Fort Gibson Dam, Oklahoma
- Grand Coulee Dam, Washington
- Kortes Dam, Wyoming
- Norfork Dam, Arkansas
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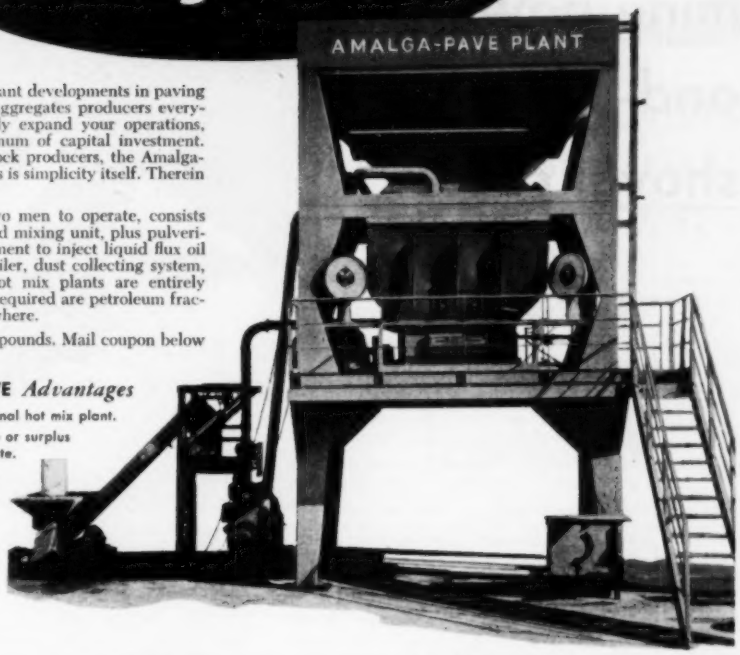
AGGREGATES PRODUCERS

Reach out FOR NEW PROFITABLE BUSINESS WITH Amalga-Pave

Amalga-Pave, one of the most significant developments in paving history, opens vast new horizons to aggregates producers everywhere. Here's your chance to greatly expand your operations, make real money with a bare minimum of capital investment. Already in successful use by many rock producers, the Amalga-Pave *Cold Mix* Asphalt Paving Process is simplicity itself. Therein lies its great economy.

The mixing plant, requiring only two men to operate, consists merely of conventional weigh box and mixing unit, plus pulverization pug mill and necessary equipment to inject liquid flux oil into mill. The rotary dryer, steam boiler, dust collecting system, screens, etc. of the conventional hot mix plants are entirely eliminated. Only special ingredients required are petroleum fractions, easily obtainable nearly everywhere.

Batch capacities from 1,000 to 6,000 pounds. Mail coupon below for full details *today*.



Revolutionary AMALGA-PAVE *Advantages*

- ★ Less than ½ the initial cost of conventional hot mix plant.
- ★ Enables you to use otherwise low value or surplus materials—sand, rock dust, crusher waste.
- ★ Greatly expands your marketing area. Product can be shipped any distance, ready to be laid.
- ★ Products can be stockpiled indefinitely. Never hardens until rolled and subjected to traffic.
- ★ Safer—Amalga-Pave plant is fireless, smokeless, dustless.

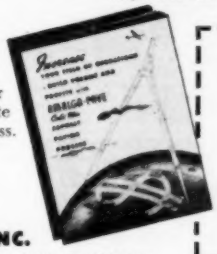
STOCKPILING—Ready-mixed Amalga-Pave can be stockpiled for weeks and months. Ready for immediate use as required.

LAYING—Amalga-Pave may be spread by Motor Patrol, Blade, Mechanical Spreader or simple hand raking.

ROLLING—Rolled with conventional equipment. Surface declared equal to hot-mix by operators and engineers.

Mail Coupon Now!

Clip and mail coupon at right for illustrated brochure giving complete data on Amalga-Pave Process.



NATIONAL AMALGA-PAVE, INC.
357 S. ROBERTSON BOULEVARD, BEVERLY HILLS, CALIFORNIA

NATIONAL AMALGA-PAVE, INC.
357 S. Robertson Blvd., Beverly Hills, Calif.

Gentlemen:

Please send illustrated brochure telling how I can make money with Amalga-Pave.

Name_____

Address_____

City_____ State_____

*Read experiences of successful producers with Amalga-Pave—in this issue of Pit and Quarry.

We know mine power and shovel cable

—we're miners ourselves!

Power shovel loading blasted copper ore in the Chuquicamata, Chile, open pit mine of the Chile Exploration Company, an Anaconda subsidiary.

We know what ANACONDA Mine Power Cable and SH-D Securityflex Shovel Cable can do for your production because we're miners ourselves. We watch their performance in our own mines.

Here are the important features of ANACONDA Mine Power and Shovel Cables that produce more mine output per dollar of cable investment and maintenance:

Butyl Insulation for higher dielectric strength and resistance to moisture; for less damage by heat and compression.

Neoprene Jacket and Fillers for light weight, flexibility, flame resistance, freedom from electrolysis. Neoprene makes a tougher jacket, costs you less, makes cable more adaptable, easier to handle.

Special Features of Type SH-D Securityflex Shovel Cable are its patented non-kinking rubber-cored ground wires that provide large contact area with the conductor shield; the copper-cotton conductor shield that eliminates chafing failures, greatly simplifies splicing.

Ask your nearest Anaconda Sales Office or Anaconda Distributor for complete information. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

the right cable for the job

ANACONDA®

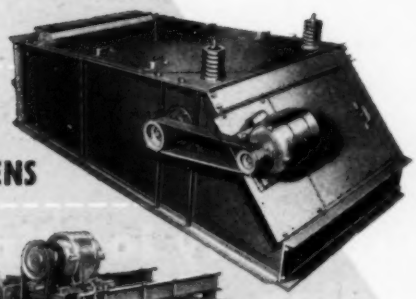
WIRE AND CABLE

SYMONS SCREENS

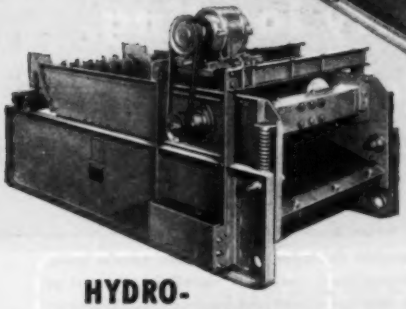
for most applications . . .

from PRIMARY SCALPING down through the FINER SEPARATIONS

VIBRATING BAR GRIZZLIES

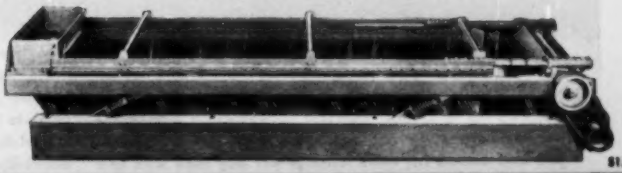


ROD DECK SCREENS



HYDRO-SIZER SCREENS

HORIZONTAL SCREENS



For sizing operations, Nordberg offers a broad line of Symons Vibrating Screens and Symons Vibrating Bar Grizzlies in a wide range of sizes to meet practically every problem. Here are the "highlights" of the units illustrated:

Symons Vibrating Bar Grizzly . . . for scalping coarse materials, designed to assure non-clogging action with big capacity.

Symons Rod Deck Screen . . . employs a patented screen deck, utilizing replaceable spring steel rods. Features low screening cost—big capacity—low maintenance—long life—ideal for wet and sticky materials.

Symons Hydro-Sizer Screen . . . for fine mesh, wet screening of sand, mill pulps, oil well mud, chemicals, etc.

Symons Horizontal Screen . . . unsurpassed for accurate sizing of stone, gravel, slag, coal and ores. (Fully enclosed units available for efficient "hot plant" asphalt operations). Built in a variety of deck combinations, permitting a wide range of sizes to be handled.

Write for descriptive literature covering the type of unit in which you are interested.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN
NEW YORK • SAN FRANCISCO • WASHINGTON • SPOKANE
MEXICO, D. F. • LONDON • TORONTO • JOHANNESBURG

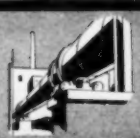
S181

NORDBERG

Machinery for processing ores and industrial minerals

PRIMARY CRUSHERS

SYMONS CONE CRUSHERS



ROTARY KILNS

GRINDING MILLS

MINE HOISTS

DIESEL ENGINES

Barber-

MODEL 374

HEAVY-DUTY LONG-REACH PORTABLE CONVEYOR

ONE MAN

high-capacity loading, unloading, stockpiling of all bulk materials

Here is a pneumatic-tired portable conveyor with capacities from 150 to over 425 tons per hour. The B-G 374 can be towed from job to job, pile to pile, and has all the flexibility in use of smaller portable conveyors. It is built for heaviest service, yet one man can operate it to load, stockpile and unload far more tonnage per day than with any other truly portable conveyor. The 374 will handle sand, stone, wet concrete, coal—any bulk material—at a cost so low that every aggregate producer, contractor, City, County or State Highway Department handling large quantities of materials, should get the full details now on this new heavy-duty machine.

see your BG distributor

Greene

150 to 425 TONS/HOUR

The 374 conveyor can be equipped with vibrating screen to reject over-size while loading or unloading.

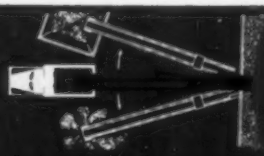
The 374 is an heavy-duty machine. It can build tall, high capacity piles to store more material in restricted areas; it can keep up with high production operations such as elevating materials to crushers, surge storage bins, etc.; it can load or unload cars or trucks with new standards for speed and low cost. Combined with crawler-type portability, these factors offer appreciable savings in manpower and operating expense.

VERSATILE...

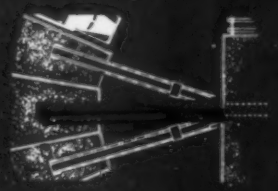
Here are a few examples of what the 374 Conveyor, with its complete line of accessories, including feeders, vibrating screens, discharge spouts, loading hoppers, etc., can do for you in your heavy-duty bulk material handling operations.

Wide reach and high discharge for high, extended storage piles.

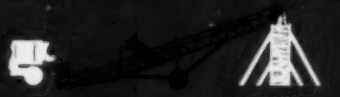
Low road clearance, heavy-duty entire-ton loading and pneumatic tires, for fast over-the-highway loading.



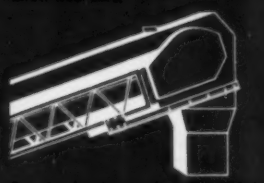
Truck loading, car dumping or stock-piling without moving the conveyor is possible with the 374 elevating discharge boom.



Swivel wheels allow the 374 conveyor to swing to load trucks direct or to radial storage.



Equipped with hopper, the 374 can elevate or convey any material direct to farm.



For dry bulk transfer, the 374 is equipped with hood or telescoping boot to prevent dust or material from escaping.

send coupon for details

Available in belt widths of 18", 24" and 30", in lengths from 30' to 60', the 374 can be invaluable to you in these days of restricted manpower and the need for high production operations. Fill in and send this coupon for your copy of the 374 Bulletin.

BARBER-GREENE COMPANY
AURORA, ILLINOIS, U. S. A.

117

Barber-Greene Company
Aurora, Illinois

( ) Send bulletin on 374 Conveyor.

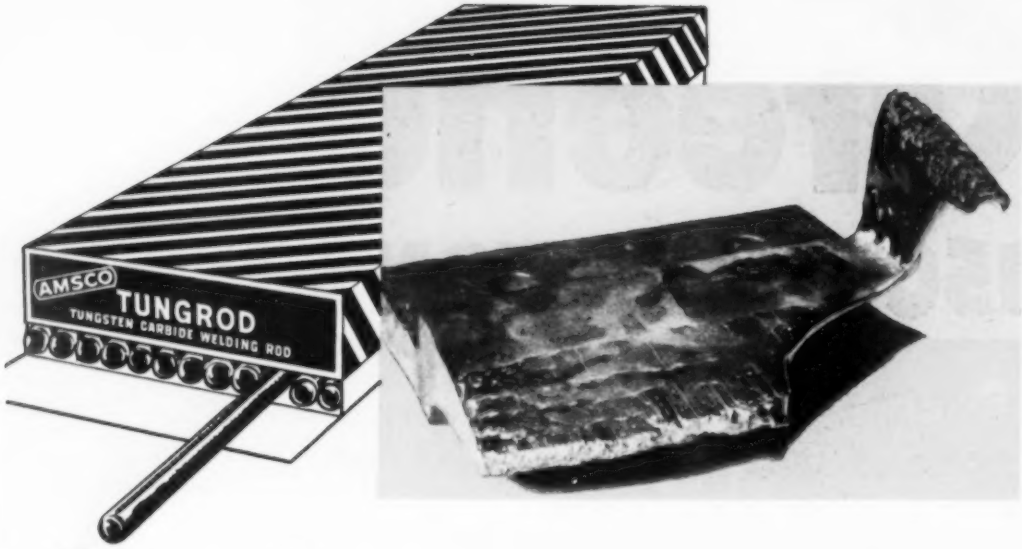
( ) Have representative call.

Name .....

Firm Name .....

Address .....

City ..... State .....



Saved HUNDREDS OF DOLLARS PER MONTH IN PULVERIZING!

An example of how the AMSCO Hardfacing System can help you fight wear profitably

Here's why the AMSCO HARDFACING SYSTEM can save you money

Hardfacing recommendations are as sound as the manufacturer who makes them. For a half-century, Amsco has specialized in fighting the high cost of wear—first with manganese steel and later with another big weapon . . . AMSCO Hardfacing Rods and Electrodes.

The result is the AMSCO Hardfacing System . . . where a wide range of Amsco Rods are selected for use according to a systematic appraisal of the equipment part and wear factors involved.

Whether your particular problem is one of wear caused by impact, abrasion, heat, corrosion—alone or in combination . . .

Amsco has both the research facilities and the years of on-the-job experience necessary to help you make important reductions in your operating costs.

A large Pennsylvania brick company was faced with this problem: their pulverizer plows wore out every two weeks due to extreme abrasion of clay with a high silica content. An expensive period of down-time and replacement labor resulted.

In trying to stop this high replacement cost, a test was made. Each plow was hardfaced with AMSCO Tungrod—specially developed by Amsco research for high resistance to abrasive wear.

Result? The plows hardfaced with AMSCO Tungrod lasted 4 times as long . . . 3 out of every four replacement jobs were eliminated! The saving amounted to several hundred dollars *each month!*

AMSCO Tungrod permits big savings—through longer service and fewer replacements—on many other applications. If you have an equipment part used in cutting or pulverizing non-metallic materials, the possible savings—*to you*—are too big to be overlooked!

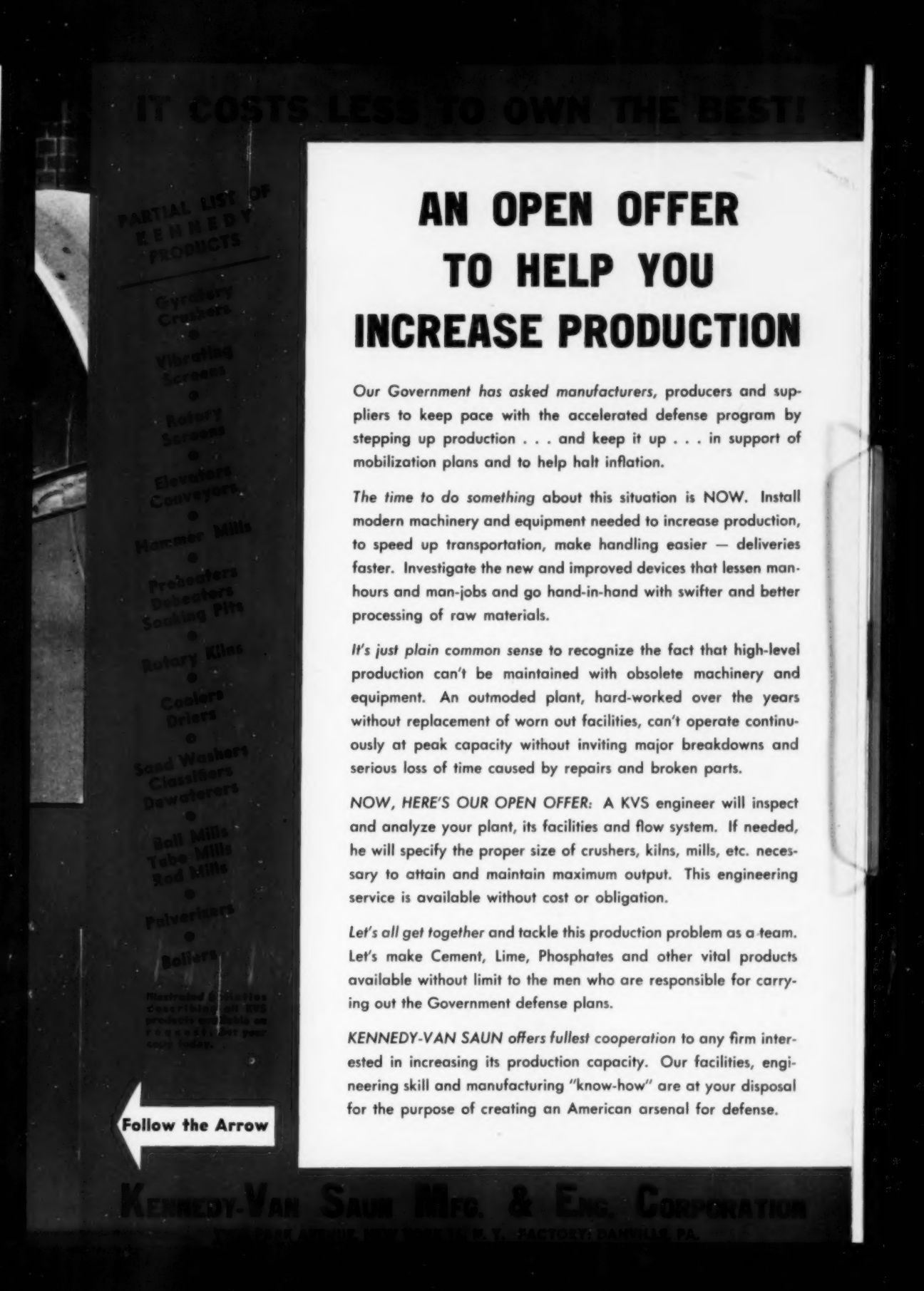
Write today for illustrated hardfacing catalog — and nearest distributor's name.

AMSCO®
WELDING PRODUCTS

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
396 EAST 14th STREET · CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.



AN OPEN OFFER TO HELP YOU INCREASE PRODUCTION

Our Government has asked manufacturers, producers and suppliers to keep pace with the accelerated defense program by stepping up production . . . and keep it up . . . in support of mobilization plans and to help halt inflation.

The time to do something about this situation is NOW. Install modern machinery and equipment needed to increase production, to speed up transportation, make handling easier — deliveries faster. Investigate the new and improved devices that lessen man-hours and man-jobs and go hand-in-hand with swifter and better processing of raw materials.

It's just plain common sense to recognize the fact that high-level production can't be maintained with obsolete machinery and equipment. An outmoded plant, hard-worked over the years without replacement of worn out facilities, can't operate continuously at peak capacity without inviting major breakdowns and serious loss of time caused by repairs and broken parts.

NOW, HERE'S OUR OPEN OFFER: A KVS engineer will inspect and analyze your plant, its facilities and flow system. If needed, he will specify the proper size of crushers, kilns, mills, etc. necessary to attain and maintain maximum output. This engineering service is available without cost or obligation.

Let's all get together and tackle this production problem as a team. Let's make Cement, Lime, Phosphates and other vital products available without limit to the men who are responsible for carrying out the Government defense plans.

KENNEDY-VAN SAUN offers fullest cooperation to any firm interested in increasing its production capacity. Our facilities, engineering skill and manufacturing "know-how" are at your disposal for the purpose of creating an American arsenal for defense.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

[illegible] PARK AVENUE, NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

LONGER KILNS PROVIDE LONGER LIFE AND INCREASE PRODUCTION

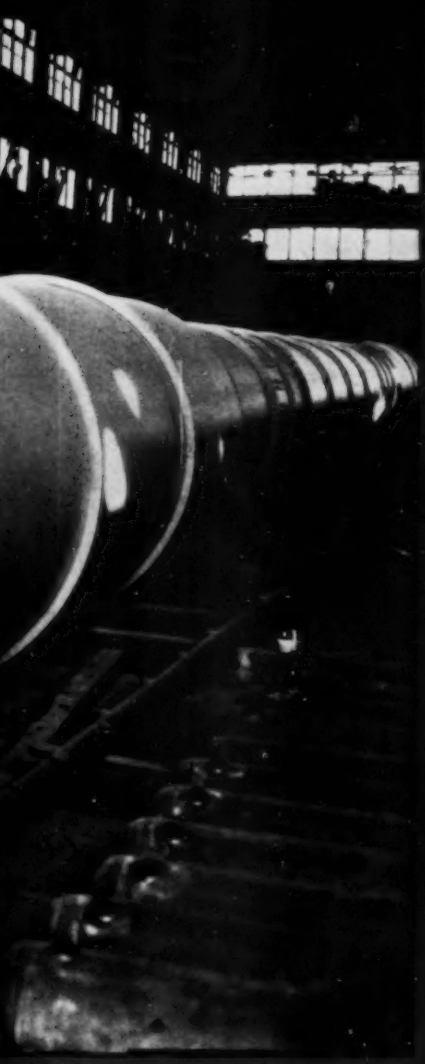
Accurate performance records, capacity and output tests, show conclusively that *longer* kilns increase production, last longer and operate at lower cost.

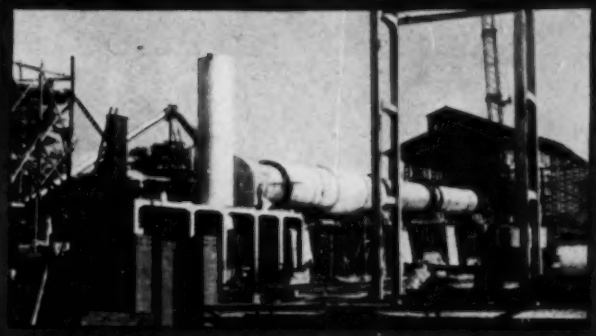
KVS builds all sizes of kilns, engineered to meet specific requirements, with the ultimate result always in view that they must produce top quailty . . . economically . . . consistently . . . efficiently and operate at peak capacity with minimum maintenance. Their performance records live up to this requirement in every test . . . under all conditions.

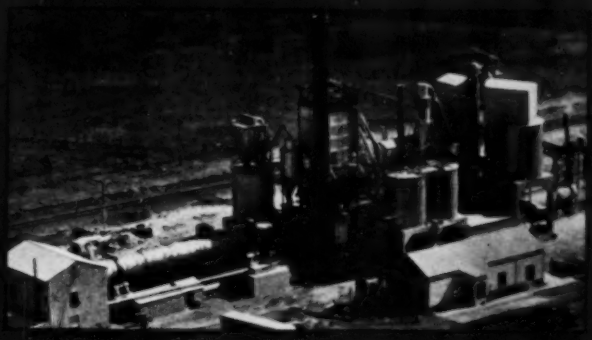
Above we illustrate a 230′ kiln being readied for shipment at our Danville, Pa. plant. At the right we show four KVS kiln installations, of various lengths 150′ to 450′ built to produce MORE lime and cement to meet the call for increased production.

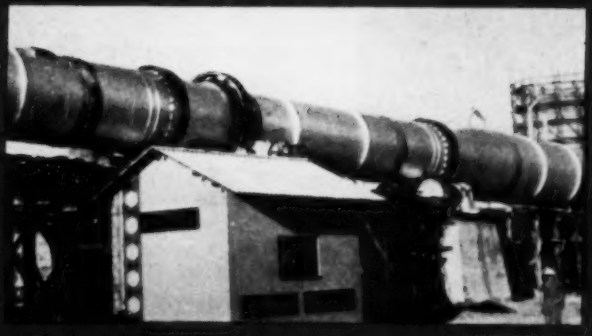
Any kiln user interested in improving the output of his plant should investigate KVS kilns which step up production by 20% or more. Based on this type of superior performance, it's no wonder users say, "It Costs Less to Own the Best." That's why they buy KVS machinery and equipment. It will be a pleasure to prove this claim!

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION









THINGS YOU SHOULD KNOW ABOUT KVS

Kilns, Coolers, Driers

Over 50 years of manufacturing "know-how."

*

Unrivalled manufacturing and shop facilities with engineering skill of the highest calibre.

*

All metals subject to chemical and physical tests to assure only highest efficiency.

*

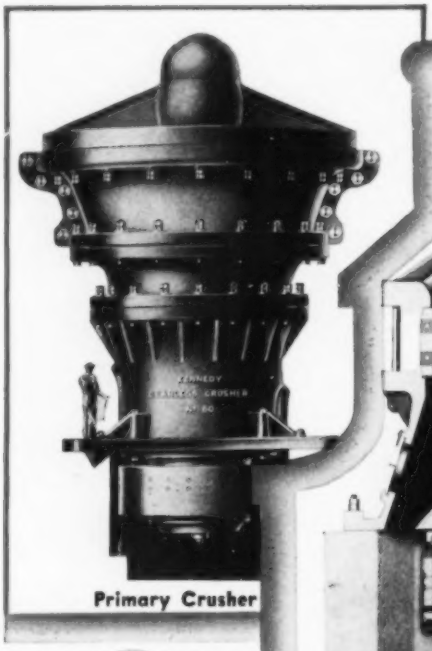
All parts are standard and interchangeable.

Blue prints and complete engineering data of all KVS Kilns, Coolers and Driers available upon request to those interested in purchasing equipment.

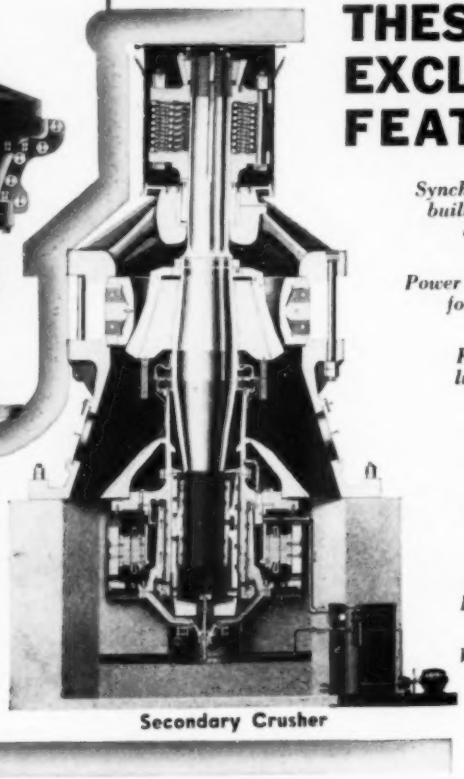
2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

IT COSTS LESS TO OWN THE BEST!

NOW . . . CONSIDER THESE KVS EXCLUSIVE FEATURES



Primary Crusher



Secondary Crusher

SEE INSIDE

ROLLER BEARING
GEARLESS GYRATORY CRUSHERS

Synchronous motor built into pulley assembly

•

Power applied ONLY for crushing

•

Force-feed lubrication

•

No gears to waste power

•

Added power at no added cost

•

Quiet — smooth Frictionless action

•

Varying capacities to serve every purpose

CRUSHERS . . . BUILT WITH THE RUGGED STAMINA OF A HEAVY TANK

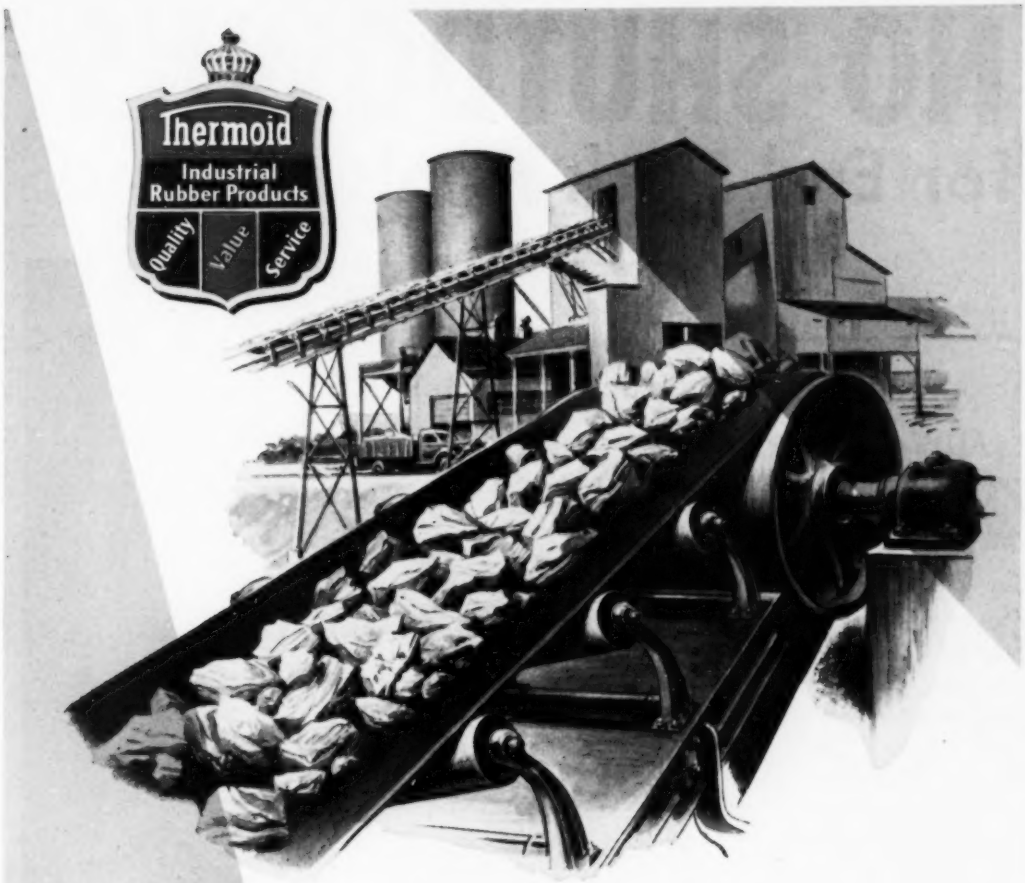
KVS GYRATORY CRUSHERS are designed and built to give years of satisfactory service, even under severe operating conditions. This important fact is being proved, year-after-year, in numerous crushing plants throughout the world.

THE ENGINEERING PRINCIPLES which make them such outstanding machines, are backed by manufacturing skill and the use of steel and other materials that cannot be excelled. In addition to dependable operation, their rugged stamina holds repair costs to a minimum and maintains production schedules.

IT'S THIS KIND OF A UNIFORM PERFORMANCE record that sets KVS crushers apart and explains WHY users agree that "It Costs Less To Own The Best." If you are interested in a proved method of increasing both production and profits, let a KVS engineer study your problem and suggest his plan.

BLUE PRINTS AND OPERATING DATA ON KVS CRUSHERS AVAILABLE ON REQUEST.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION
TWO PARK AVENUE, NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

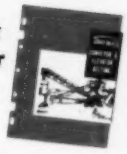


"Whatever Your Conveyor Belting Problem . . . *Thermoid Has The Answer*"

Whatever the job—whatever the nature of the materials to be handled—heavy or light, soft or abrasive, hot or cold, wet or dry, uniform or non-uniform in size—there is a Thermoid belt built to do the job at the lowest cost per ton of material handled.

Thermoid belts are made with an extra margin of endurance. You will find they stay on the job long after ordinary belts fail. With Thermoid, you will have fewer delays due to belt breakage or premature wear. Your Thermoid distributor will be glad to help you with your requirements.

Here's The Book That Will Answer Many Of Your Questions



Drop us a line for your free copy of Book No. 3679. It is a handy reference guide, concise and complete. 16 pages of valuable charts, tables and graphs tell how to select the right conveyor or elevator belt for the materials to be handled . . . how to determine capacities, speeds, weights and number of plies.

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

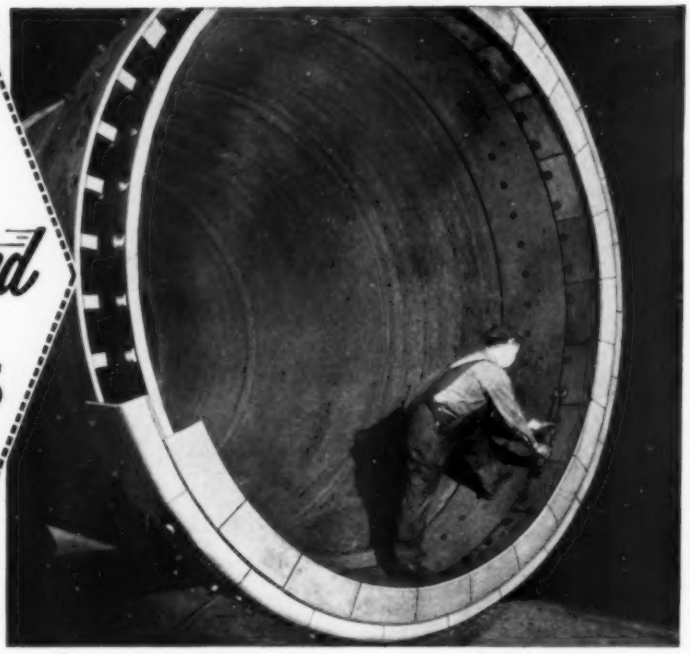
Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

NO SHUTDOWNS
for End Brick Replacement!

WITH THIS
ALLIS-CHALMERS
Air-Cooled End
FOR
ROTARY KILNS



GET RID of nose brick troubles for good with the Allis-Chalmers air-cooled kiln end shown above. The segmental alloy steel retaining ring forms a channel through which a blast of cooling air is forced.

Result: No kiln warpage; refractory brick lasts as long at discharge end as at any point along the kiln.

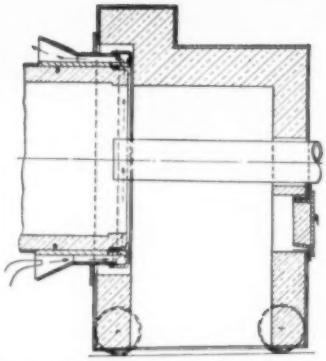
This one feature alone will, during the working life of the kiln, *pay for itself several times over* in reduced downtime and increased production . . . in lower refractory costs and longer kiln life.

Air-cooled kiln end design makes possible the use of a more positive air seal, resulting in fuel savings.

Other important features of Allis-Chalmers rotary kilns:

- **Extra thick shell at discharge end and under riding rings.**
- **Centralized instrument control of the entire operation.**
- **Modern heat recuperation equipment. Constant delivery feeders and all auxiliary kiln equipment.**

Get more facts from the A-C representative in your area, or write for **Bulletin 07B6368.** Allis-Chalmers, Milwaukee 1, Wisconsin. A-3281



Sketch shows arrangement of movable firing hood with air-cooled kiln end.

Texrope is an Allis-Chalmers trademark.

ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

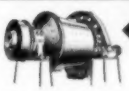
Motors

Controls

Texrope Drives

Vibrating Screens

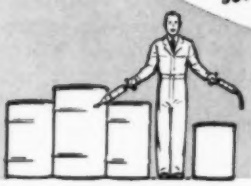
Crushers



Grinding Mills

CUT LUBRICATION COSTS with this ONE ALL-PURPOSE GREASE

"Using LITHOLINE® saves several greases and guns!"



Now you can do all lubricating jobs just as well *if not better* with one grease and one gun, using Sinclair LITHOLINE.

Using Sinclair LITHOLINE is the modern, fool-proof, money-saving way to handle all your lubrication jobs. LITHOLINE converts servicing time into production time.

ADVANTAGES OF LITHOLINE over specialized greases:

- SUPERIOR LUBRICATION AT EVERY POINT
- No danger of costly misapplication
- Quicker servicing, less downtime
- Smaller grease inventories
- Fewer dispensing units
- Less chance of contamination
- Less waste
- Simplified purchasing and distribution

Send for free folder describing demonstrations showing superiority of LITHOLINE. Write to your nearest Supplier of Sinclair Products or direct to Sinclair Refining Company, 630 Fifth Ave., New York 20, N. Y.

SINCLAIR LITHOLINE *for every lubrication job*

You increase fragmentation . . . decrease vibration with these Du Pont "MS" Caps

Owners of The Bessemer Limestone and Cement Company, Bessemer, Pa., are satisfied users of Du Pont "MS" (millisecond) Delay Electric Blasting Caps. Theirs is a low-face quarry, approximately 22 feet in height, using wagon drills as shown in the photo below at the left.

"MS" Caps are used at the Bessemer quarry for firing charges of 40 and 60% ammonia dynamite. Experience proves that these Caps greatly enhance the quarry's blasting efficiency by:

1. **Reducing concussion and vibration.**
2. **Substantially improving breakage.**
3. **Minimizing secondary blasting.**

A typical shot, below at the right, shows the excellent fragmentation that consistently results from the use of "MS" Caps.

"MS" Caps are clearly and easily identified by colored tags. You can't mistake them. They're supplied with nylon-insulated wires, protective aluminum foil shielded shunts and are available in fourteen millisecond intervals of delay: MS-25, -50, -75, -100, -125, -150, -175, -200, -250, -300, -350, -400, -450, and -500.

Try "MS" Caps in your own wagon drill quarry blasting operations. Any Du Pont Explosives representative will gladly give you complete information about them. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

The Bessemer limestone quarry is similar to many throughout eastern Pennsylvania.

Good breakage means quicker, more economical removal of rock; less secondary blasting.

DU PONT EXPLOSIVES

DU PONT
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Blasting Supplies and Accessories

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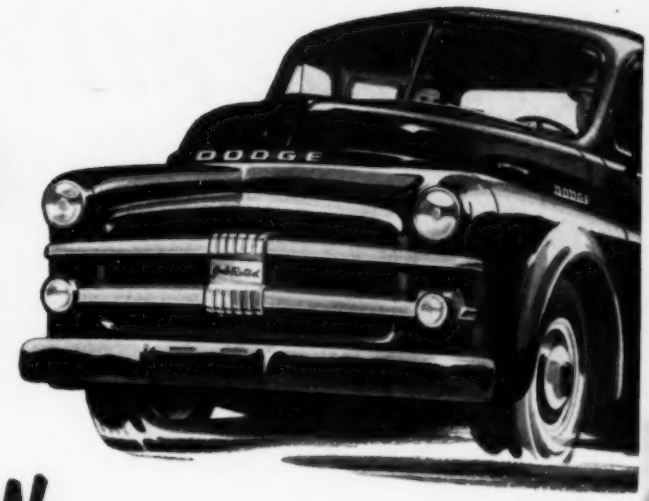

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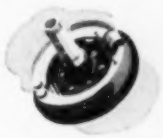

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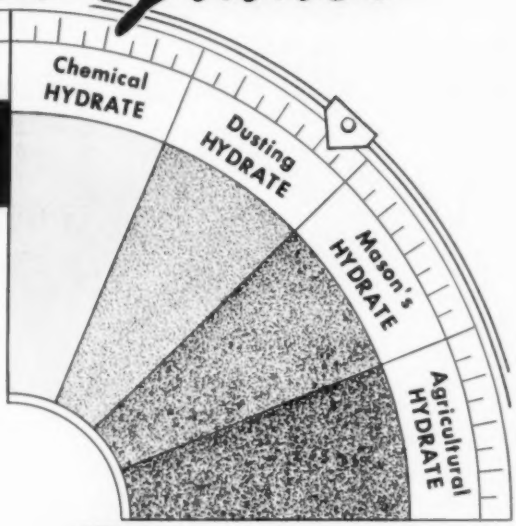

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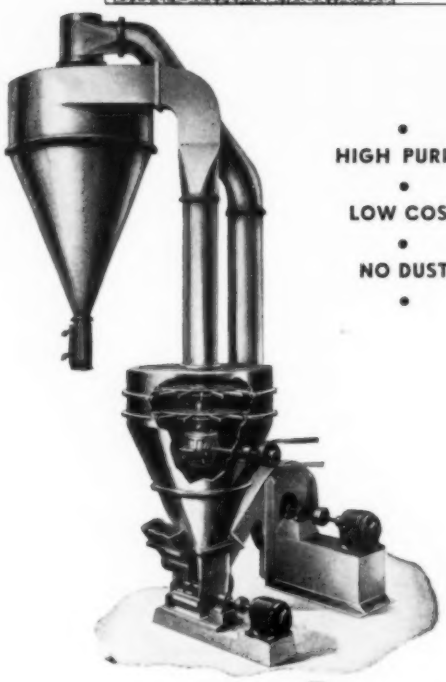
For more information about the Raymond Automatic Pulverizer, write for catalog No. 60. One of these units may be an important aid in reducing costs and improving your hydrated lime production.



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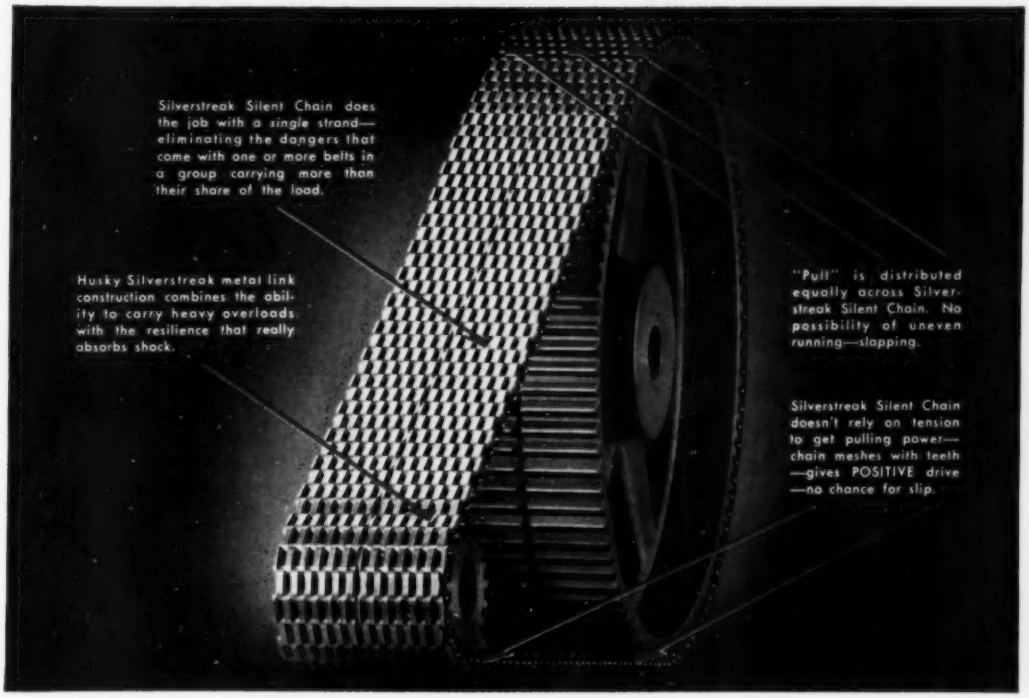
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Other things being equal, crushing capacity is directly proportional to the number of crushing strokes per minute. Capacity of Kue-Ken Crushers is therefore 25-50% greater. Higher speed makes a finer, more uniform product.

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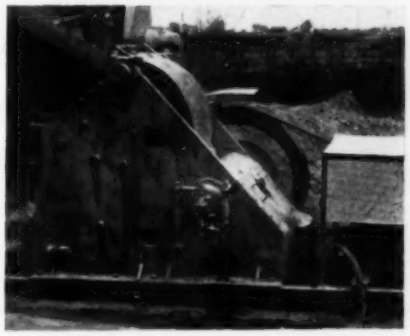
The Kue-Ken 30" x 9" shown at right operates in closed circuit with a screen. 100% minus 1½" and 100% minus 1", depending on requirements. Capacity of plant 800 tons per 8 hours to 1½", about 50% through the crusher.

90% of total production has been 100% minus 1". The previous crusher was unable to produce anything finer than 1½".

Lubrication required only twice yearly. All mechanism runs in a sealed filtered "crankcase type" oil bath. No oil cans or grease cups. Automatic safety device for tramp iron and overload quickly reset. No shearing or breaking parts.

Longer Jaw Plate Life and Bonus Capacity gives lowest cost crushing to Kue-Ken users.



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Plates in previous overhead eccentric type crusher were completely worn out in 3 months.

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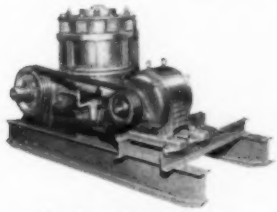
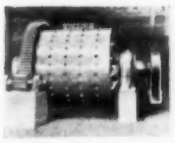


Kue-Ken Gyracones



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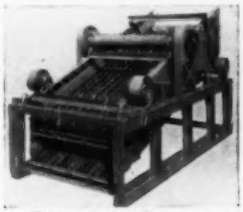

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1. High Strength per Pound of Metal Used

The *Superior* crusher has been designed by Allis-Chalmers to take advantage of the latest engineering practices, modern materials and manufacturing methods. Cast steel instead of cast iron construction makes the entire crusher highly resistant to shock. Integrally cast reinforcing rings on top and bottom shell provide high strength with an economical use of metal.

Cast steel spider arms are of box construction . . . offer greatest strength and least interference for feed. Spider is fully protected by rim and arm liners. Mainshaft is annealed forged steel. Concaves are manganese steel. The eccentric has a replaceable bronze inner sleeve and bottom shell bushing. Bevel gear and pinion are heat treated steel with spiral cut teeth.

2. High Capacity per Pound of Metal Used

As high as 3040 tons of stone or ore per hour can be crushed in the 60-89 *Superior* crusher (60-in. receiving opening). High capacity design includes: straight down discharge, eliminating need for diaphragm . . . a countershaft that runs at available motor speeds . . . a deep crushing chamber that is the result of over a half century of experience in building gyratory crushers.

The shape of this scientifically designed curved crushing chamber offers a broad area of breaking contact, which spreads wear over more surface. The crusher setting can be maintained over long periods. Changing the lower tier of concaves makes it possible to get various initial settings without changing the angle of nip — a big advantage.

3. Vertical Adjustment to Compensate for Wear

To compensate for wear on mantle and concaves, the *Superior* crusher has been designed so that the mainshaft can be raised with respect to the concaves. This is made possible by a long threaded portion of the mainshaft and a cast steel adjusting nut supported in the spider hub. The curved crushing chamber, moreover, has been designed to utilize this vertical adjustment to the fullest extent in compensating for wear.

The original discharge setting can be maintained, for all practical purposes, throughout the life of a single set of crushing surfaces with no more than one resetting of the concaves.

A-3316

Improved Lubrication System, Dust Seal

A fully automatic lubricating system consists of a tank, oil pump, motor, pressure type oil filter and condenser type cooler, all external to the crusher for better accessibility. Oil from tank is pumped through filter and cooler to the crusher, lubricating the eccentric wearing plate, then the inner eccentric bearing. It returns down the outer eccentric bearing, lubricates gear and pinion and returns to tank. Oiling system has protective flow and temperature switches.

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More facts about the *Superior* crusher can be obtained from the A-C representative in your area. Allis-Chalmers, Milwaukee 1, Wisconsin.

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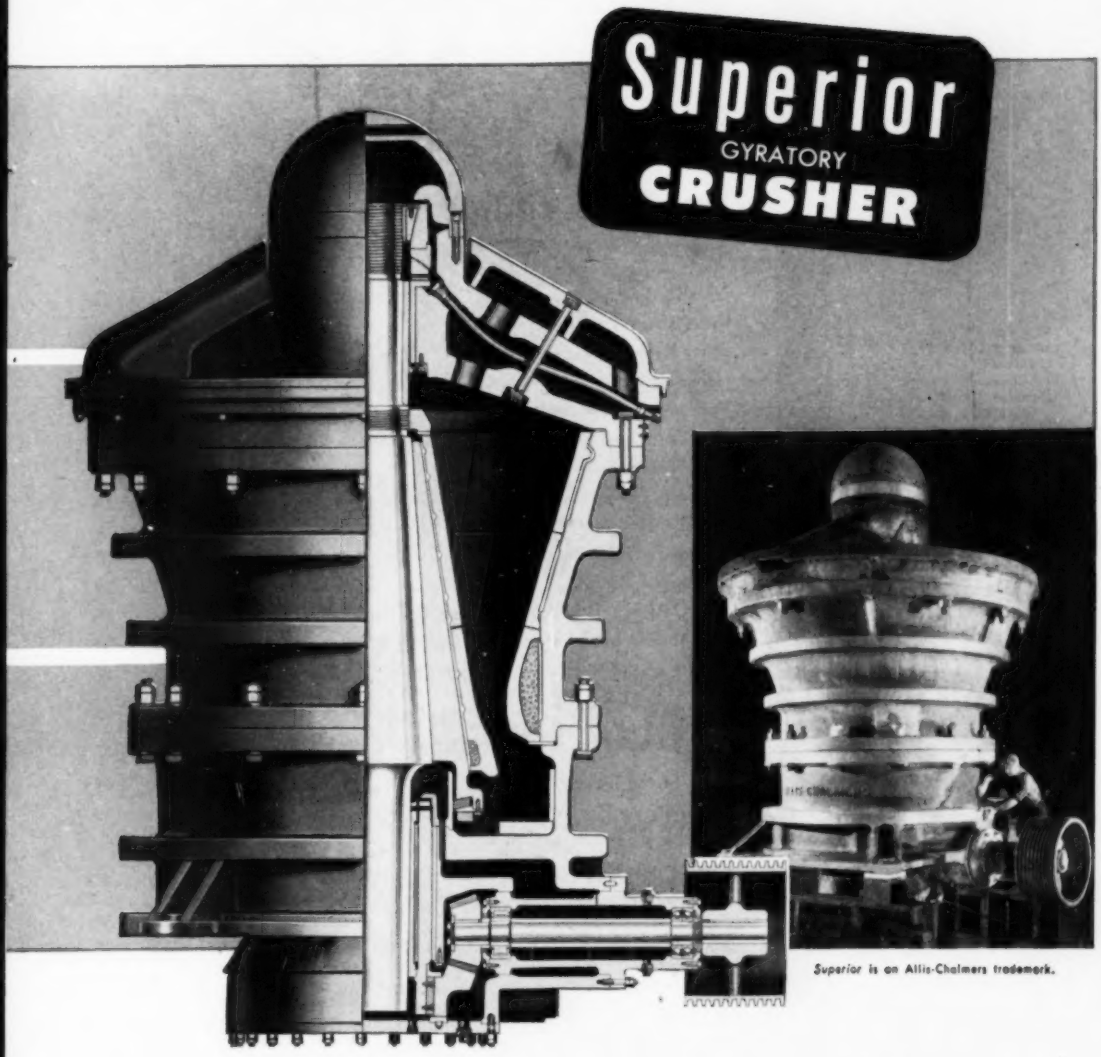

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PIT AND QUARRY

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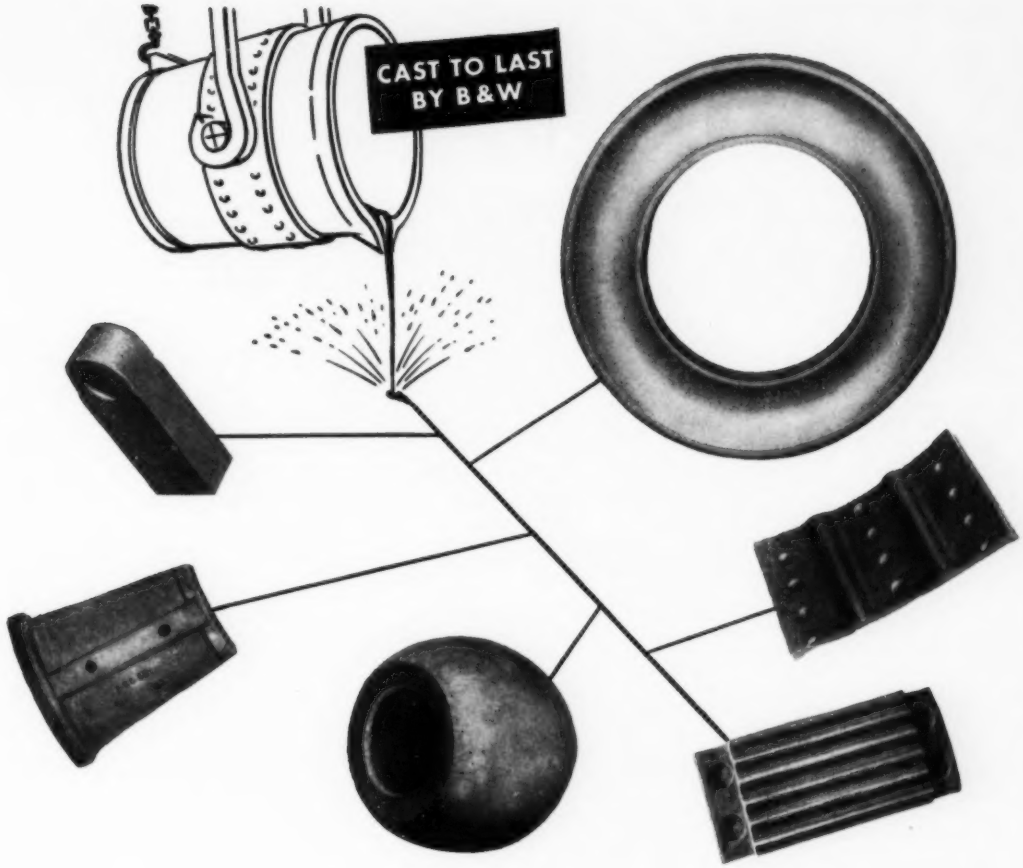

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editorial

Conservation and Defense

THE United States is now going through a period which can go down in history as one of several serious crises that it has successfully overcome or which can conceivably become disastrous to the cause of freedom throughout the world. We are faced with the task of building up our military strength and that of our allies to a point where we can resist any aggression by predatory powers bent on world conquest, at the same time keeping our industrial machine and our agriculture going at top speed to supply our domestic needs, with a surplus for other freedom-loving countries. This is a monumental task, but it can be done with the cooperation of industry, labor, and government.

It is obvious that, with a total of 3,000,000 men scheduled to go into the armed forces, and millions more being diverted to the defense plants which are springing up everywhere, we must produce more of nearly everything with a smaller labor force. This must be done with less steel and other vital materials available and with less machinery. The only answer is that we must get maximum productivity with the present plant and equipment and labor. As far as the nonmetallic minerals industries are concerned, there will be shortages of equipment, supplies, labor, power, explosives, freight cars, etc. This means that we must conserve everything and eliminate waste. No item, however small, should be overlooked because, if it is a necessary item, it will have to be replaced.

Along with industry in general, the nonmetallic minerals industries will have to take steps to conserve in every possible way. Plants and equipment will have to be operated at maximum efficiency, with the least possible amount of idle running time. Labor forces will have to be kept busy, and health and safety must be emphasized in order to reduce lost time from work. Explosives, power, and fuel will have to be used with maximum effectiveness. This calls for good management both in the office and in the plant. Maximum carrying capacity will have to be obtained from freight cars and trucks without dangerous overloading. This can be done only by reducing idle time and by loading and unloading cars as soon as possible after they are received. The related concrete building units and ready-mixed concrete industries will have to make cement go further. This can be done by more careful design of mixes, improved manufacturing procedures, etc.

MANY manufacturers of machinery and equipment have already taken steps to help conserve the materials or equipment they manufacture, both directly and by helping and encouraging users to do so. In this issue of PIT AND QUARRY there is an article prepared by one of the largest manufacturers of conveyor belting, telling how to get maximum life from this product. There is also mention of the nationwide program of a large truck manufacturing firm to help its customers get maximum performance and life from trucks. Another item tells how a manufacturer of electrical equipment is training industrial personnel in the proper selection and care of electric motors. An article scheduled for an early issue will contain sound advice from a manufacturer of all types of mechanical rubber goods on how to conserve these products through its conservation maintenance plan. Conservation has also been prominent on the programs at the recent national conventions of several nonmetallic minerals industries.

Wherever possible, the labor forces at plants taken over for, or diverted to, war production have been retained but nevertheless there will be a vast migration of workers from other industries to these plants. The pool of unemployed is very low, when compared to that at the beginning of World War II, and will be of little help. The number of women who can be attracted into war plants is limited, and the draft is taking care of younger men. The bulk of the workers in these war plants must come from private industry; and we must be ready to get along without them, and with the help available.

The defense program laid out for us will mean a short supply of materials which we have in abundance in normal times, serious shortages of materials which are imported to a large extent from other countries, and the complete absence from the market of many materials vital to this effort.

The administration of the various authorities which have been enacted to guide this tremendous defense program has been placed largely in the hands of outstanding businessmen who know and understand the problems of business in general. Everything, from President Truman's first pronouncements on through the early actions of the administrators appointed, indicates that this program will be more lenient with private industry than was the case during World War II. The announced aim is to divert certain individual industries to war production, but to make it possible for others also to exist and to profit. Only in this way, of course, will it be possible to maintain government income at the level necessary to pay all or most of this program "as we go."

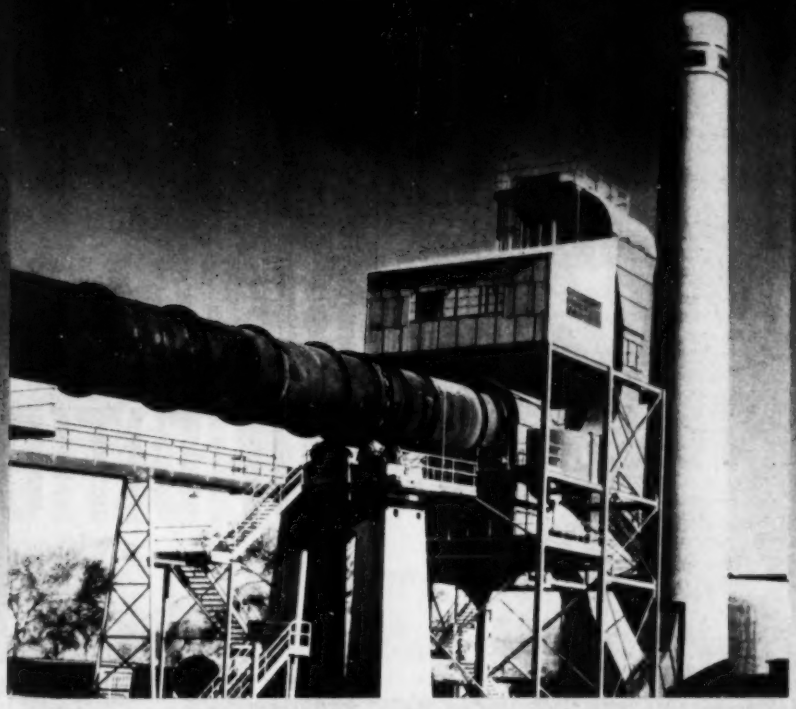
THE efficient operation of a business has always been a worthwhile achievement. In good times it has meant higher profits, in bad times it has meant survival, and in more recent years it has been necessary in order to keep ahead of spiraling costs. In the present national emergency such operation is the patriotic duty of every business, every businessman, and every worker.

Every American knows that the drastic program laid out to prepare this country for any emergency is one of necessity. We are now vulnerable to some degree to attack by a foreign power, and speed in eliminating our vulnerability is imperative. Only by being strong in every department can we avoid attack by predatory powers, either on us or on other free nations which we are bound to protect. Only in this way can we ever expect to end the cold war and the uncertainty as to when, where, and how hard the Red menace will strike next. Only in this way can we hope to avoid a world conflict. There can be no compromise; we must be prepared.

Walter E. Trauffer

SMIDTH

ROTARY KILNS



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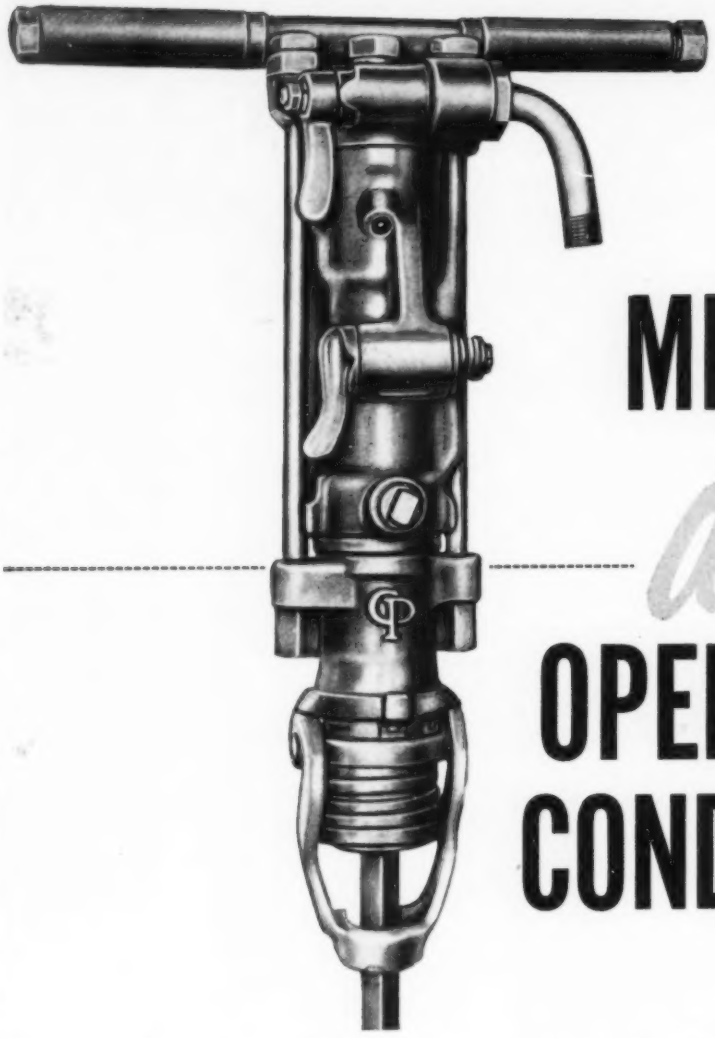

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This is made possible by its 4-in-1 backhead, which permits quick, inexpensive change-overs from one type of operation to another.

Its remarkably high drilling speed, exceptionally strong rotation, unsurpassed hole cleaning, excellent riding qualities—all make for fast, efficient, economical performance.

Maintenance is low because of such features as a replaceable bronze chuck rotation nut to protect piston splines from scoring, and a replaceable bronze bushing liner to make it easy to maintain piston alignment and full cushioning.

Get in touch with your nearest CP office for a demonstration of the CP-59, or write for a copy of SP-3009.

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news of the industry

PIT AND QUARRY

Control of Consumers Co. Passes to Murchisons—"Business as Usual"

Purchase of a controlling interest in Consumers Company of Chicago by the Murchison interests of Dallas, Tex., was revealed recently by Robert C. Reed, president of Consumers. The price was not disclosed.

To give effect to the change in control, two directors were added to the Consumers board of directors. They are John Dabney Murchison and James H. Clark, formerly of Chicago, who is now in Dallas.

Mr. Reed stated that he will continue as president of Consumers, and that no change is contemplated in the management or activities of the company, which handles crushed stone and gravel, agricultural limestone, flux, sand, and ready-mixed concrete.

Originally organized as Consumers Company in 1913 through a merger of several Chicago concerns, including the Knickerbocker Ice Company and the City Fuel Company, the firm assumed its present form in 1937 after a reorganization. In 1948 the company's ice business was sold. Operations of Consumers are carried on in the Chicago and Kenosha-Racine (Wis.) areas.

$750,000 Laboratory Planned By U. S. Gypsum near Chicago

U. S. Gypsum Company has exercised an option and placed purchase money in escrow for a 10-acre tract of land on Chicago's Northwest Highway just west of Des Plaines, Ill., where the company plans to construct a laboratory this spring.

The laboratory building, which is to cost an estimated $750,000 and employ from 130 to 150 persons, will be used for research in new products and in testing old, established products.

New Jersey Assembly Passes Silicosis Compensation Bill

On March 5, the New Jersey Assembly unanimously passed and sent to the State Senate a bill affording greater workmen's compensation to industrial victims of silicosis or asbestosis. Majority Leader Lawrence Cavinato supported the bill by declaring that there was no valid reason why the two diseases which are caused only by inhaling the products of industry should be considered apart from other industrial diseases.

Under present New Jersey law, a 1944 act disqualifies persons who have contracted the two diseases from disability benefits. Moreover, a New Jersey worker now is ineligible to get benefits until after he becomes permanently disabled by the disease, and even then the scale of payments is lower than for permanent disability from other employment causes.

Pacific Sand & Gravel Co. Completes Building Project

Construction undertaken last year by the Pacific Sand and Gravel Company north of Centralia, Wash., has been reported nearing completion. New facilities include two large buildings housing offices, repair shops, and a storage shed.

Heading the firm is Robert Coluccio, president, who is assisted by Ed Bowers, general asphalt superintendent, and Ed Siemers, general crushing superintendent.

Coming Events

April 30-May 4, 1951 — Chicago. Materials Handling Conference and National Materials Handling Exposition. International Amphitheatre.

May 13-19, 1951 — Hot Springs, Va. 16th annual meeting, National Industrial Sand Association. The Homestead.

May 20-26, 1951 — Hot Springs, Va. Annual convention, National Lime Association. The Homestead.

June 18-22, 1951 — Atlantic City. Annual meeting, American Society for Testing Materials. Chalfonte-Haddon Hall.

Kelley Island Plans $12,000,000 Expansion To Match Steel Output

A $12,000,000 expansion program has been announced by Ralph L. Dickey, president of the Kelley Island Lime and Transport Company of Cleveland, O. This expansion program is designed to boost the company's output from the present 3,500,000 gross tons to 8,000,000 tons annually. The product will consist of high-grade fluxing stone and is slated to go to steel makers including the Republic, Bethlehem, Youngstown Sheet and Tube, Wheeling, and Weirton steel companies. Nearly a half ton of limestone is required to produce a ton of pig iron, and other limestone is used in open-hearth steel-making operations. The expanded programs of the steel companies furnished the incentive for the expansion.

It is planned to produce most of the stone from reopened quarries in Presque Isle County, Mich., on Lake Huron. The reserves are in a 140-ft. stratum underlying several hundred acres of the company's holdings. This development, which will cost about $7,000,000, includes a pier to accommodate 600-ft. long lake carriers, a processing plant, and the quarry equipment. Production is expected to be 1,800 t.p.h. during the eight months of navigation on the lake. Inland Steel and U. S. Steel are operating quarries in the same region.

The company is also planning a lime plant to supplement its present 60,000-ton per year operation at Buffalo, N. Y. This will be used to supply the chemical industry clustered along Lake Erie in the Painesville-Ashtabula area. A new refractory plant to utilize dolomite from deposits near Gibsonburg, O., is also in the planning stage. This expansion would double the company's production of refractory materials.

Kelley Island's quarries at Marblehead, O., have been the main source of its high-quality fluxing limestone. The other divisions of the company will not be directly affected by the expansion program. They produce agricultural lime, building materials, aggregate, gravel, and sand.

The National Gypsum Company was one of four concerns which recently were awarded $4,000,000 orders each for airplane landing mats for the Army Engineers Corps.

Lehigh Awards Contracts For $11,000,000 Plant to Make Cement from Shells

The Lehigh Portland Cement Company has awarded contracts for the construction of its new plant between Flagler Beach and Bunnell, Fla., about 70 miles south of Jacksonville. The plant, which involves many features unique in the manufacture of cement, will be built by the Walsh Construction Company of Davenport, Ia., and the Duval Engineering & Contracting Company of Jacksonville. F. L. Smidth & Company, New York City, are the engineers for the project.

Several years ago after exhaustive exploration the Lehigh Company discovered north of Flagler Beach the most extensive deposit of coquina ever found in the United States. The coquina shells, which are rich in calcium carbonate, will, when mixed with low-silica clays, be the raw materials for portland cement. The shells are massed in three parallel ridges, each six miles long, from 800 to 1,000 ft. wide, and approximately 50 ft. deep. The property, comprising 10,000 acres, is adjacent to the Florida Intracoastal Canal throughout its length.

Lehigh also owns more than 1,800 acres of limestone and clay properties in Marion County to the north of Ocala, Fla., and 1,000 acres of kaolin deposits in Georgia, which may be used to supplement the clays obtainable on the company properties in Flagler and Marion counties.

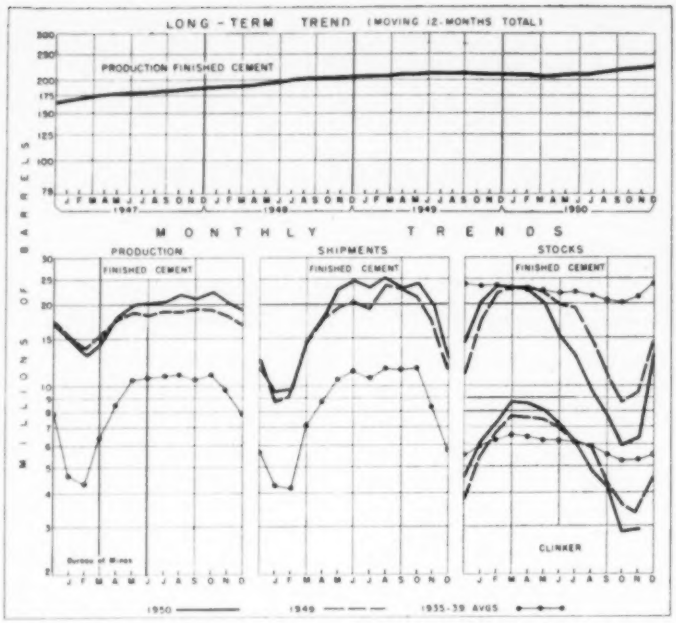
The new plant will be built on a site directly adjoining the Intracoastal Waterway. A spur track of the Florida East Coast Railway will be extended from Bunnell. Thus the production may be moved either by low-cost water transportation or by rail.

A five and one-half-acre dock site has been acquired along the St. John's River in Jacksonville. Here it is planned to erect storage silos and a packhouse from which shipment may be made to points in the Jacksonville metropolitan area and to destinations within a reasonable distance from the city.

The new Bunnell plant, with a capacity of 1,400,000 bbls. per year, will provide cement for the National Defense Program and should also help to relieve Florida's cement shortage. As evidence of the importance of the project to the defense program, the National Production Authority has issued a Certificate of Necessity, based on an estimated cost of approximately $11,000,000.

Equipment and material orders for the new plant have been placed, and construction will be pushed as rapidly as possible. It is contemplated that the plant will be in production by the middle of 1952.

The Pittsburgh Plate Glass Company, whose present Kansas City quarters are in the path of a proposed trafficway, plans to spend nearly $500,000 for a new office and warehouse to be built at North Kansas City of pre-cast concrete panel sections. Construction will begin as soon as federal approval has been secured.



SUMMARY—The portland cement industry produced 19,116,000 barrels of finished cement in December, 1950, as reported to the U. S. Bureau of Mines. This total is 13 percent greater than that reported in December of the previous year. Mill shipments totaled 12,477,000 barrels—7 percent above the December, 1949, figure, while stocks on December 31 were 11 percent below the corresponding period a year ago. Clinker output during the month amounted to 20,180,000 barrels—an increase of 10 percent over that for December, 1949.

PRODUCTION—The output of 19,116,000 barrels of finished cement in December, 1950, came from 150 plants located in 35 states and Puerto Rico. In the same month of 1949, 16,967,000 barrels were produced in 149 plants. Clinker production was up 10 percent over the December, 1949, total.

SHIPMENTS—Mill shipments of 12,477,000 barrels increased 7 percent over the total reported for December, 1949. The demand for cement, as indicated by mill shipments, declined from the previous month's (November, 1950) total of 19,791,000 barrels. Shipments were greater in 11 districts and smaller in 8 districts than those reported for December, 1949. The percentage changes range from a decrease of 36 percent in the Ohio district to an increase of 53 percent in the Colorado-Arizona-Wyoming-Montana-Utah-Idaho district. Shipments increased 45 percent in the Puerto Rican district.

STOCKS—On December 31, stocks of finished cement amounted to 13,021,000 barrels—11 percent below the December, 1949, figure, while stocks of clinker were 4,012,000 barrels—13 percent below the same month of the previous year.

Lawrence Sales, Earnings Hit All-Time High Last Year

The Lawrence Portland Cement Company in 1950 earned a net income after taxes of $907,068 or $4.03 a share on its 225,000 shares of $10 par value common stock outstanding. This compares with net earnings of $813,848 and $3.61 a share in 1949.

Net income for 1950 was the largest in the company's history, exceeding that of 1926, the previous top year, by approximately 5 percent. Dividends of $1.50 a share were paid during the year as compared with $1.25 in 1949.

In his report to the stockholders President James H. Ackerman revealed that approximately $1,700,000 had been spent at Northampton, Pa. Mr. Ackerman also reported that, subject to the approval of the stockholders, retirement plans have been agreed upon for the benefit of the hourly wage employees at both mills, together with a somewhat similar plan for salaried employees.

Lawrence had a perfect safety record for 1950, completing the year without a single lost time accident either in Maine or Pennsylvania. It was the only cement company in the country operating more than one mill with a 100 percent safety record for the year.

Truck Conservation Is Program of White Motors

The White Motor Company has revived and modified the truck conservation and maintenance plan which it used in World War II.

The plan calls for inventorying all White equipment in use and then projecting the repairs and parts that would normally be needed. This will enable the company to maintain balanced stocks of parts and correct service facilities at its 500 outlets to keep White trucks operating with a minimum of lost time.

Operator training and a plan for unit exchange of repair parts will be additional features.

Expanded Production Of Defense Minerals Praised by DMA Head

The minerals industries have made an "excellent start in responding to the nation's need for expanded production of critical minerals, James Boyd, administrator of the Defense Minerals Administration, told the Colorado Mining Association in Denver, Colo., recently.

Proposals submitted to the DMA so far indicate that many producers, especially small mine operators, will need some form of assistance from the government. Three major forms of assistance are available under the Defense Production Act of 1950, Dr. Boyd stated, to those planning to expand production of critical minerals by opening new mines, expanding present operations, and enlarging milling and treatment plants. These three kinds of aid are government loans, government guarantee of private loans, and government purchase contracts. In addition, rapid amortization of new productive capacity is permitted under the Internal Revenue Act of 1950.

Mineral operators should apply directly to the DMA in Washington for assistance in expanding operations. Application forms as well as assistance in filling out applications may be obtained from field teams of the DMA. Headquarters have been established in Regional Bureau of Mines Offices at San Francisco, Spokane, Denver, Joplin, Minneapolis, Knoxville, Pittsburgh, and Juneau, Alaska.

Applications in the Washington office and projects under investigation in the field are concerned with more than 60 different minerals, but preference will continue to be given to those on the critical list, which includes asbestos (spinning grade), beryllium, fluorspar, graphite (crucible flake), mica (strategic), sulphur, and talc (steatite).

Expansion Projects Underway At Two Canada Cement Plants

Canada Cement Co., Ltd., which normally supplies about four-fifths of Canada's needs for portland cement, has two major expansion projects under way.

One, a new plant at Havelock, N. B., will have an initial annual output of 800,000 bbls. and is designed for additional capacity when necessary. This plant is scheduled to begin operation in July, 1951.

The other project involves expansion of the Exshaw, Alberta, plant to provide an additional 1,200,000 bbls. per year. Preliminary construction work is already under way.

With the new expansion, Canada Cement's production can be expected to increase by at least 5 percent this year.

Siscoe Gold Mines expects to bring into production shortly the first commercial deposits of vermiculite to be found in Canada. The deposit was recently discovered in Lanark County, Ont.

• In this scene, photographed at operations of the Montagu Divisional Council, Montagu, Cape Province, U. S. Africa, a "Caterpillar" diesel D4 tractor, equipped with a No. 4A bulldozer is feeding the hopper of a rock crusher. The latter is powered by a "Caterpillar" diesel D311 engine. The product, to be used for road construction, is being loaded directly into a waiting truck.

G.E. Announces New Course For Fast Personnel Training

A new educational program designed to aid in the rapid training of industrial personnel in the selection and application of modern electric motor drives has been announced by the General Electric Company. Chief objective of the course is to expedite the indoctrination of qualified personnel in the nation's plants as an aid to industrial mobilization.

This Motor Selection and Application Course is made up of nine 35-mm black-and-white slidefilms, student review booklets on each lesson, and an instructor's manual. Each film has a running time from 15 to 30 minutes, and is accompanied by a 16-in. sound recording of the script.

Prepared to enable any competent engineer to teach the course, the 96-page instructor's manual includes complete instructions on how to plan and set up each lesson, projection information, and complete scripts and pictures for all nine slidefilms.

The program will be distributed to G-E district offices throughout the country for showings to interested groups. These will include users and potential users of electric motors, application engineers, power sales engineers, machinery manufacturers, designers, contractors, consulting engineers, and students.

The entire kit, consisting of the nine slidefilms, one instructor's manual, and ten copies each of the nine student booklets, is packaged in a luggage-type carrying case, and may be purchased from General Electric for $100. Additional manuals and student booklets are available at nominal cost.

Cover Picture....

• Seen in our cover picture of the Nello L. Teer Company's straight-line rock crushing plant are three crushers, powered by "Caterpillar" D364 diesel engines. A D364 diesel-electric set furnishes electric power to operate the individual electric motors driving the other equipment. At the right is the surge stockpile, following the primary crusher, which insures against plant operating delays. Also visible are the cone secondary and reduction crushers. This operation is located near Durham, N. C.

Phosphate Rock Revealed As New Uranium Source

Jesse Johnson, manager of raw materials for the Atomic Energy Commission, speaking before the agricultural subcommittee of House of Representatives, recently told that body that the commission had found a method for extracting uranium from phosphate rock.

Mr. Johnson disclosed that uranium is a by-product obtained in producing phosphate fertilizer, but for military reasons did not state what method is employed to extract the substance.

• At an operation of the Crystal Lake Trucking and Excavating Company, near Crystal Lake, Ill., a Caterpillar diesel D318 engine is driving an Aurora pump pumping water for the firm's sand-and-gravel washing plant.

Lawrence Plans Expansion Despite Steel Restrictions

Restrictions on steel for non-defense purposes may make it impossible to complete the installation of a new kiln at the Lawrence Portland Cement Company, Thomaston, Me. this year. As part of a $1,500,000 expansion program, a 356 ft. kiln is planned to replace the smaller of two kilns now in operation. If proposed plans go into effect, production will be upped by 50 percent.

Company officials say, however, that Lawrence still is determined to carry out its modernization and expansion program at Thomaston. Materials which are available are being collected and work will be pressed until shortages force a halt.

Cement Sales, Profits Up In Many 1950 Fiscal Reports

Most cement companies with fiscal years ending December, 1950, showed increased sales and better profits in 1950 than were shown in 1949 reports. Even with higher federal taxes, the great demand for all building materials, particularly residential, resulted in a heavy market.

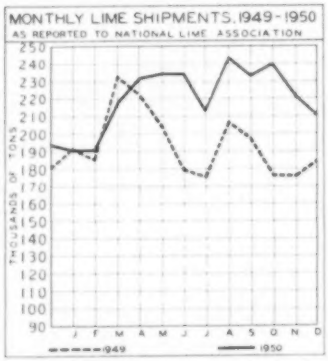
The Lehigh Portland Cement Company announced a net profit of $6,553,702 for 1950. This was equal to $6.89 a share on sales of $44,312,434, and compares favorably with 1949's totals of $6,337,111, $6.67, and $40,997,217 respectively.

Pennsylvania-Dixie Cement Corporation and wholly-owned subsidiaries reported a total income of $23,004,495 for last year, with a net profit of $3,213,273 and $5.34 earned per share. In 1949, this organization reported a total income of $18,073,049, a net profit of $2,631,506, and $4.37 earned per share.

The Riverside Cement Company of San Francisco reported a net profit of $1,695,884 for 1950 with profits equal to $7.06 per class A share. For 1949, profits totaled $1,619,105 or $6.51 per share.

Net income for the Missouri Portland Cement Company during 1950 was $1,760,268, or $5.98 per common share. This compared with net income in 1949 of $1,429,286 or about $4.86 per share.

Gross profits of the Medusa Portland Cement Company reached a new high of $3,396,853 for 1950, a gain of 22.8 percent over 1949. Net profit of $1,758,353 was exceeded only by the 1928 high of $1,788,428. Peak net sales for the year ending December 31 total $17,172,740, up $1,027,897, or 6 percent from the year before.



According to data collected by the National Lime Association, 47 companies in December, 1950, shipped 217,541 tons of lime (143,110 quicklime; 74,431 hydrate). Reporting companies represent 59.4 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments were approximately 403,000 tons. Shipments by uses and grades for December, 1950, were:

	Quicklime	Hydrate
Agricultural	1,338	7,253
Building	15,258	38,188
Chemical	126,514	28,990
Totals	143,110	74,431

Ideal Cement Earnings Hit $7,200,000 in 1950— Shipments Up 13 Percent

New records in production and shipments were made in 1950 by the Ideal Cement Company, according to a statement made by C. K. Boettcher, president, in his annual report. Earnings reached $7,257,435 or $5.23 per share, while 1949 earnings were $6,524,217 or $4.73 per share. Total income last year stood at $35,451,257, as compared with $30,584,698 in 1949, and shipments were 13 percent higher than in the previous year.

Mr. Boettcher announced that when the Baton Rouge and Ada, Okla., production is available, there will be a further 16 percent boost in output.

In September, 1950, Ideal founded a wholly-owned subsidiary, Great Western Aggregates, Inc., to study and develop aggregate sources of all types, as well as to acquire and operate gypsum deposits and other nonmetallic mineral properties required in the operation of cement plants.

Calaveras Allocates Orders For Non-Government Users

Stepped-up government defense orders have forced Calaveras Cement Company officials to set up an allocation system on its non-government shipments, according to an announcement released by H. C. Maginn, vice-president and chairman of the executive committee.

Mr. Maginn stated that unusually heavy demand led to cement shortages in the summer of 1950, and that this trend had extended farther into the winter than in other years. He indicated that a continued tight supply situation is expected during the rest of this year.

Iowa Quarry Owners Win $100,000 in Pipeline Suit

At Ottumwa, Ia., a court opinion recently awarded $100,000 to the owners of a 200-acre farm on which a quarry had been operated, because a gas pipeline had crossed the land and rendered futher operation unsafe and impracticable.

Plaintiffs were Donel K. and Ethel B. Nedrow, owners of the quarry, who sued the Michigan-Wisconsin Pipeline Company. The Kaser Construction Company operated the quarry. After a sheriff's jury had awarded the owners $1,440 in damages for the pipeline right-of-way, they went into district court and sued for additional damages. After a trial which lasted for six months and presentation of voluminous technical evidence an opinion was delivered for a $100,000 award for the value of the rock rendered worthless by the pipeline.

Officials of the Halliburton Oil Well Cementing Company have reported as follows for their 1950 operations: net profit, $7,875,271 ($6 per share), as compared with $7,412,093 ($4.89 per share) in 1949.

$10,000,000 Made Available To Spur Exploration For Critical Minerals

The Defense Production Administration has allocated $10,000,000 of the funds authorized by the Defense Production Act of 1950 to the Department of the Interior for use in stimulating exploration for strategic and critical minerals and metals needed in the defense program, according to an announcement made by Secretary of the Interior Oscar L. Chapman.

The funds will be used to assist prospectors and mine operators in searching for and blocking out new reserves vitally needed for the nation's rearmament program and for essential civilian requirements. The funds will be used generally on a matching basis and the government's share would be repayable if the ventures are successful.

Currently the exploration program will apply only to the following: antimony, asbestos, beryl, bismuth, cerium (and rare earth ores), chrome, cobalt, columbium, copper, cryolite, fluorspar, graphite (crucible flake), kyanite and other mullite refractories, lead, lithium, manganese, mercury, mica (strategic grade), miscellaneous ferro-alloy ores, molybdenum, monazite, nickel, tantalum, tungsten, sulphur, and zinc.

Austin-Western Becomes Part of Baldwin Corporation

Marvin W. Smith, president of Baldwin - Lima - Hamilton Corporation, announced that on March 8, 1951, the assets and business of Austin-Western Company, Aurora, Ill., became a part of the Baldwin-Lima-Hamilton Corporation.

McClure Kelley, president of Austin-Western, stated that the firm's present management and personnel will remain the same, and that this group will continue to direct the company's operations, including manufacturing, sales, and engineering. Certain Austin-Western products will be sent to other Baldwin-Lima-Hamilton plants for manufacturing, allowing the Aurora plant to concentrate on the production of road graders in greatly increased quantities, as well as a new hydraulic crane.

Novella & Cia. of Guatemala Hits New Production Peak

Officials of Carlos F. Novella & Cia., Guatemala City, Republic of Guatemala, Central America, have announced that installations completed last year have raised the company's portland cement production to 1,100 bbls. per day.

Total sales of portland cement in 1950 in Guatemala reached an all-time high of over 975,000 bags, or an average monthly sale of about 81,000. Since the plant is now capable of producing from 120,000 to 130,000 bags per month, there will be a surplus of from 39,000 to 49,000 bags, and production must be limited in order to stay within the storage capacity of the plant.

Since the removal of all controls on the free sale of cement in Guatemala last June consumers are now free to purchase in any quantities to meet their needs. Novella & Cia. distribution covers the entire republic through the operation of 12 agencies in the principal centers of consumption.

Spokesmen for the National Gypsum Company recently disclosed that negotiations had been completed by the company for acquisition of the National Mortar & Supply Company, which operates a lime plant at Gibsonburg, O. It was indicated that National's finish lime capacity will be doubled by the expansion.

Dodge Reports Building East of Rockies Rises 45% in Jan.-Feb. Period

February construction contract awards were $1,140,527,000 or 9 percent higher than January and 46 percent more than in February, 1950, in the 37 states east of the Rockies, according to the F. W. Dodge Corporation. The total for the first two months of 1951 was $2,183,-775,000 or 45 percent more than the comparable figure for 1950.

Non-residential awards of $431,166,-000 in February were 6 percent below January, but were 62 percent ahead of February a year ago. Residential contracts at $531,146,000 were 26 percent above January, 1951, and 47 percent higher than February, 1950. Public and private works and utilities totaled $178,-215,000 in February, or 10 percent more than the January figure, and 17 percent higher than in February last year.

With increases in all categories for the first two months of 1951, percentages of gain in the individual classifications were as follows: Non-residential, 78; residential, 35; public and private works and utilities, 11.

Clarence O. Mittendorf Heads Mineral Expansion Agency

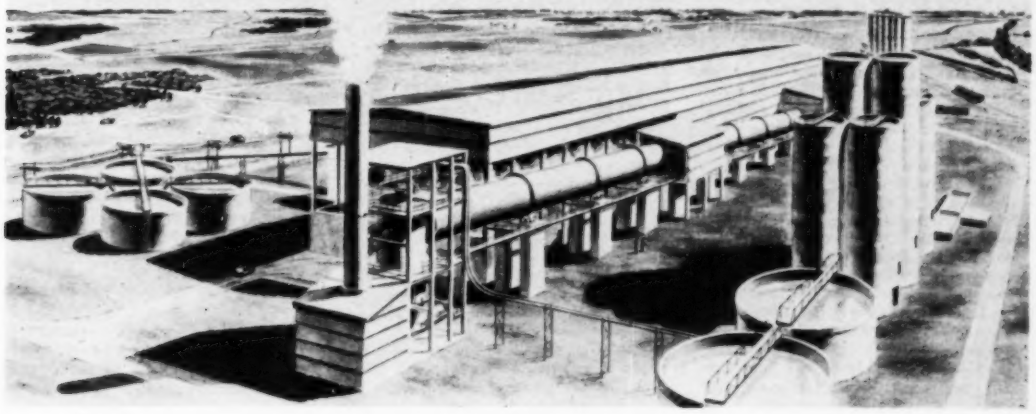
Clarence O. Mittendorf was recently appointed director of the Production Expansion Division of the Defense Minerals Administration.

Mr. Mittendorf is on loan from the Economic Cooperation Administration. He had served as director of industry and mining of the ECA mission to Turkey. During World War II he was director of the Office of Premium Price Plan.

In his present post Mr. Mittendorf will assist in the formulation of policies to encourage the output of minerals in short supply.

Eastern Rock Products, Inc., Utica, N. Y., has won a 100 percent safety award for completing the plant safety contest of Associated Industries of New York State without a lost-time accident.

• The artist's conception of Marquette Cement Manufacturing Company's new 1,000,000-bbl. per year plant now under construction at Brandon, Miss., as it will appear when completed this autumn. Located on a 500-acre tract at the intersection of the Illinois Central Railroad and U. S. Highway 80, the plant will turn out all types of Portland cement, as well as oil well and masonry cement. Details of plans for the new facilities were given in the October, 1950, issue of Pit and Quarry (page 55).



Johns-Manville Corp. Loses Louis H. Brown—Chief Executive since '46

A heart attack on February 26 claimed the life of Lewis H. Brown, chairman of the board and chief executive officer of the Johns-Manville Corporation, at Delray Beach, Fla. Mr. Brown had gone to Florida for a few days' rest.

When he became president of Johns-Manville in 1929, he was one of the youngest men in the country to hold an executive post of such importance. He was then only 35 years of age. As a young college graduate, he had advanced from a $15-a-week job with a paper concern to the position of assistant sales manager within two years. After his return from serving with the American Expeditionary Force in France during World War I, with the rank of captain, Mr. Brown became associated with Montgomery Ward & Company in the firm's personnel department. Within eight years he was assistant general operating manager of all Ward plants. When T. F. Merseles, then president of the company, was elected president of Johns-Manville Corporation in 1927, he took Mr. Brown with him as his assistant. Upon the death of Mr. Merseles less than two years later Mr. Brown was named president and a director of Johns-Manville. In 1946 he became chairman of the board and chief executive officer.

Well known in industry for his progressive spirit, this forward-looking executive was one of the first to conduct informal regional stockholder meetings in various cities throughout the country. In 1941 in a series of 12 meetings he discussed personally with J-M stockholders the company's history, management, personnel, earnings, balance sheet, and physical assets. He also gave much attention to the improvement of management-employee relations and actively promoted the adoption of such practices as collective bargaining and the adoption of the 8-hour day and the 40-hour week before these were required by law. He introduced employee attitude surveys which were used to guide management in formulating policies. Mr. Brown was also one of the first business executives to make a financial report to employees, as well as to stockholders.

Louis H. Brown

Active in civic and philanthropic programs, Lewis H. Brown served actively in annual campaigns of the American Red Cross and as chairman of the Citizens War Relief Committee of the Red Cross during its special drive in 1940. He was president of the Asbestos Institute in 1933, and was associated with several other industrial and professional groups. In addition to discharging the duties of executive officer of the Johns-Manville Corporation, Mr. Brown was also chairman of the board of the Canadian-Johns-Manville Co., Ltd., the Johns-Manville Products Corporation, and the Johns-Manville International Corporation.

During World War II he served as advisor to Major General L. H. Campbell Jr., chief of ordnance. On June 27, 1946, he was awarded the Medal for Merit for his distinguished services to our country.

Pamphlets on V-Loans Outlines Eligibility Musts Under Government Rulings

Credit and financial executives, prime and sub-contractors, will find worthwhile information in a current pamphlet on V-loans prepared by the Credit Research Foundation, an affiliate of the National Association of Credit Men.

Entitled *How to Obtain a V-Loan*, this pamphlet outlines eligibility requirements and procedures for obtaining a defense loan in accordance with the provisions of the Defense Production Act of 1950 and Federal Reserve Board Regulation V. The pamphlet summarizes the details and financial data which a contractor must furnish a financing institution when applying for a loan for working capital or, in certain circumstances, a loan for expanding production facilities.

The pamphlet points out that under the present law only those holding contracts entered into prior to July 1, 1951, are eligible for loan guarantees under Regulation V. A copy of this pamphlet may be obtained by writing the Credit Research Foundation, 79 Madison Avenue, New York 16, N. Y.

Hedges, Moon Appointed To Vital Defense Posts

The appointment of Joseph H. Hedges, veteran mining engineer of 25 years' service with the Bureau of Mines, as special assistant to Director James Boyd of the Bureau was recently announced by Secretary of the Interior Oscar L. Chapman.

As special assistant to the director, Mr. Hedges will carry out various special assignments, including the expediting of Bureau programs and activities relating to the production of strategic materials, especially Bureau projects designed to increase production from domestic ores.

Since September, 1949, Mr. Hedges has been chief of the Minerals Division of the Bureau at Washington, where he has coordinated work in ferrous metals, non-ferrous metals, light metals, rare and precious metals, fertilizer minerals, and construction materials. Before coming to Washington, he had been superintendent of the Bureau's Southwest Experiment Station at Tucson, Ariz.

Appointed to succeed Mr. Hedges as chief of the Minerals Division is Lowell B. Moon, a mining engineer and geologist with broad experience in this country and in South America. He was one of the group who planned and organized the Defense Minerals Administration. In his new post he will be in charge of that part of the Bureau whose emergency mission is to work closely with the DMA in expanding mineral production.

Freeport Sulphur Co. Plans To Lease Louisiana Domes

Freeport Sulphur Company officials have completed arrangements with The Texas Company to lease a sulphur dome at Bay Ste. Elaine, La. In view of the acute shortage of sulphur, Freeport proposes to build a plant to operate the property.

It is reported that arrangements have also been made to lease four other domes believed to contain sulphur. These are known as Dog Lake, Lake Pelto, Venice, and Garden Island Bay. Bay Ste. Elaine, Dog Lake, and Lake Pelto are held by The Texas Company under lease from the Louisiana Land & Exploration Company. Venice is held by the Gulf Oil Company.

All of these properties are in swamp land, and some are under water, but they will be explored because of the extremely short supply of sulphur in this country.

Iowa Lime Concern Stock Purchased by 4 Partners

Four partners, Charles Hohenadel, F. W. Hunzinger, Robert Dolfin, and James McDonough, have purchased the stock of the Louisa County Lime Products Corporation near Wapello, Ia., and have begun operating the plant under the same name. Mr. Hohenadel is president, Mr. Hunzinger, vice-president, and V. E. Hank, secretary and treasurer.

Louisa County Lime Products property also includes a gravel pit near Oakville, Ia., which will also be operated by the new owners. The firm will continue to produce agricultural limestone and road rock.

The Minnesota Mining and Manufacturing Company, St. Paul, is entering an entirely new field with the introduction of a quartz crystal grit for poultry breeders. The product bears the trade name "3M Brand Crystal Grit."

So. Calif. Rock Products Assoc. &
So. Calif. Ready Mixed Concrete Assoc.
Dinner in Honor of Stanton Walker
Biltmore Hotel, February 23, 1951

• Represenatives of 26 Southern California producing organizations attended Los Angeles dinner honoring Stanton Walker for his service in the nonmetallic minerals and concrete industries.

Stanton Walker Honored By California Associations

More than 170 aggregates producers, ready-mixed concrete men, and prominent engineers and builders attended a dinner honoring Stanton Walker, director of engineering of the National Sand and Gravel Association and National Ready Mixed Concrete Association, on February 23 in the Biltmore Hotel, Los Angeles, Calif.

The affair was sponsored jointly by the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association. Mr. Walker had attended the 47th annual convention of the American Concrete Institute at San Francisco earlier in the week, having flown to the West Coast from New Orleans immediately after the conclusion of the annual gatherings of the two national organizations whose engineering and research programs he has long directed.

Presiding was Robert Mitchell, president of Consolidated Rock Products Company, Los Angeles, and occupying places of honor at the speaker's table, besides Mr. Walker were the following: Dr. Herbert Insley and Douglas Parsons, U. S. Bureau of Standards chiefs; W. E. Gabelman, chief engineering inspector of the Los Angeles Department of Water and Power; Paul O. Harding, assistant California state highway engineer; Sam Kennedy, Los Angeles County road commissioner; and a score or more of other notables.

Mr. Walker praised the southern California producers for their accomplishments in simplification of aggregate sizes, uniformity in concrete-mix specifications, and the development of accurate and quality standards for fine-aggregate gradations. He especially commended the work of the Technical Committee of the two regional organizations, headed by L. I. Johnstone, vice-president of Graham Bros., Inc., Los Angeles.

Representatives of 26 southern California producing organizations were in attendance. There was also a producer from the Middle West, F. N. Anderson, Anderson Sand & Gravel Company, Saginaw, Mich.

Arrangements for the dinner and the cocktail hour which preceded it were in the capable hands of H. G. Feraud, who manages the business affairs of the sponsoring associations.

M. B. Garber Appointed N.P.A. Trade Consultant

M. B. Garber, director of sales for The Thew Shovel Company, Lorain, O., has been appointed an on-call consultant to the National Production Authority on matters pertaining to the requirement, use, and production of construction machinery. The appointment was announced by Marshall M. Smith, director of the National Production Authority.

During World War II Mr. Garber was director of the Construction Machinery Division of the WPB.

M. B. Garber

Industrial Building Boom Sets Two All-Time Records

Engineering construction contracts in the United States for January and February, 1951, reached an all-time high of $2,537,957,000. As reported by *Engineering News-Record*, this was 58 percent higher in total value than for the same period in 1950.

The two-month total included $1,600,000,000 for private contracts, a 92 percent increase over 1950 and another all-time record, and $923,000,000 for public works, a 21 percent increase over corresponding volume in 1950.

Industrial building during the January-February period topped $1,026,000,000. Public housing rose to $133,000,000 for a 365 percent rise above the slow start made in the beginning two months of 1950.

Due to government controls and restrictions that are channeling materials and manpower into the defense building program, privately financed mass housing dropped 27 percent and commercial building went down 17 percent.

Rubber Conservation Plan Offered to Industries

The Quaker Rubber Company, a division of H. K. Porter Company, Philadelphia, Pa., has developed a Conservation Maintenance Plan to conserve rubber by increasing the productive life of conveyor belting, transmission and V-belts, hose, and packing.

The program consists of a handbook, wall charts, and monthly bulletins containing illustrations, suggestions, and ideas on the correct selection, installation, and maintenance of rubber products in industrial use. It is expected that proper use and maintenance of these products will aid production of raw materials by preventing needless shut-downs, and decrease the need for rubber in replacement supplies.

The plan is offered to all industrial plants. Inquiries should be addressed to Quaker Rubber Company, Philadelphia, 24, Pa.

Pennsylvania Stone Producers Assn. Meeting

• Above: D. E. Smith, president, Juniata Limestone Co., Mifflintown, Pa.; H. W. Brown, Capitol Equipment Co., Harrisburg, Pa.; and W. O. Faylor, president of Faylor Lime & Stone Co., Middleburg, Pa.

• Below: Fred Coleman, Philadelphia, Pa., and John Rice Jr., Easton, Pa., both of the General Crushed Stone Co., and Ralph Binkley of Binkley Bros., Inc., Lititz, Pa.

• Below: H. H. Wagner, general manager of the Pennsylvania Stone Producers Assn., Harrisburg, Pa.; E. L. Schmidt, chief engineer, Pennsylvania Department of Highways; and T. C. McPoyle, president of P.S.P.A. and sales manager for the John T. Dyer Quarry Co., Birdsboro, Pa.

MORE than 400 aggregate producers, their friends, and guests attended the annual meeting of the Pennsylvania Stone Producers Association at the Hotel Penn-Harris in Harrisburg, Pa., on January 26, 1951. The stone producers acted as host to the slag, sand-and-gravel, and other aggregate producers for the fifth consecutive year, and presented an interesting program that included reports from officials of the Pennsylvania Department of Highways and the Pennsylvania Turnpike Commission.

At the morning business meeting the following officers were unanimously re-elected to serve for 1951: president, T. C. McPoyle (The John T. Dyer Quarry Co.); vice-president, Paul I. Detwiler (New Enterprise Stone & Lime Co.); secretary, W. H. Fehr (Berks Products Corp.); and treasurer, H. M. Binkley (Binkley Bros., Inc.).

The following directors were also elected for 1951: Eastern Section—J. P. Peacock (Stone and Slag Division, Bethlehem Steel Co.) and J. C. Showalter (Blue Ball, Pa.); Central Section—Paul Walker (Chambersburg Stone Co.) and F. I. Narehood (Narehood Bros.); Western Section—Lewis M. Nauss (The Carbon Limestone Co.) and Robert B. Garman (Tyrone Lime & Stone Co.).

The board of directors re-elected H. H. Wagner, Harrisburg, Pa., as general manager for his 16th consecutive year.

Following a brief report to the membership by President McPoyle, Mr. Wagner noted in the general manager's report that the Pennsylvania Stone Producers had enjoyed a greater volume of business in 1950 than during any previous year. He also pointed out that the Pennsylvania Department of Highways had changed its policy when buying stone, gravel, or slag, placing them on an equal basis, that is, on a straight ton-for-ton basis.

E. L. Schmidt, chief engineer of the Pennsylvania Dept. of Highways, spoke on *Highway Engineering Problems.* He described the serious traffic problems facing most large cities in which population shifts to outer-urban and suburban areas has placed undue stress on main traffic arteries. He also pointed out that a thorough study of this problem by the Pennsylvania Highway Department had shown that such urban-suburban automobile traveling was causing peak loads during the morning and evening hours, a condition requiring new and wider arteries in order to take care of the increased load. In many cases, he said, this was the most costly type of highway construction.

C. H. Buckius, assistant chief engineer of the Pennsylvania Highway Dept., presented a detailed report of the 1951 highway material requirements for departmental construction, reconstruction, and maintenance purposes. These figures, available by counties, indicated that a total of 1,166,870 tons of bituminous concrete, 3,146,065 barrels of cement, 1,449,588 tons of sand, 66,202 tons of reinforcing steel, 94,492 tons of structural steel, 43,118,168 gallons of bituminous material, and approximately 10,000,000 tons of crushed aggregate would be required for highway work in 1951.

Three other members of the Pennsylvania Highway Dept. also addressed the morning session of the convention. W. A. Warrick, chief construction engineer, spoke briefly of highway construction problems; N. A. Staples, chief maintenance engineer, described some of the highway department's maintenance problems; and W. H. Herman, chief research engineer, discussed new phases and problems in highway research work.

George A. Rahn, chief materials engineer of the Pennsylvania Turnpike Commission, concluded the morning program with a discussion of *Turnpike Construction, Present and Future.* "The year 1950 was a banner year for the Pennsylvania Turnpike System," he said. "During 1950, including 42 days' operation of the new 100-mile Philadelphia Extension, a total of 4,488,538 trucks, buses, and passenger cars paid tolls amounting to $9,022,398.31. This is an increase of 16.6 percent in the number of vehicles and an increase of 28 percent in revenue over 1949." Mr. Rahn also stated that the western extension of the turnpike from Irwin, Pa., to the Ohio state line would be added to the 260-mile system during the latter part of 1951.

A study of macadam construction with modern machinery and a discussion of the New Jersey Turnpike and flexible type pavements made up the afternoon session. Macadam construction was discussed by Joseph E. Gray of Macadam Pavements, Inc., along with an excellent motion picture of various construction methods. George Dent, an engineer with the Asphalt Institute, explained the New Jersey Turnpike and flexible type pavements. His address was accompanied by an interesting series of slides.

30 years ago in Pit and Quarry

THIRTY years ago, as reported in the April, 1921, issue of PIT AND QUARRY, the nonmetallic minerals industries were getting ready for a peak year of production and that issue was full of articles and items of information and advice. Explosives and blasting received much attention. The subjects included the following: starting drilling early, checking dynamite which may have been damaged by freezing and thawing, tunnel blasting, advantages of drilled over dobe secondary shots, reforms in present methods of handling explosives, danger of using low-grade foreign detonators, etc. Other timely subjects covered were blasting cemented gravel banks, shooting bottoms in a quarry, disposal of flood water, lining concrete bins with steel, methods of loading sand into box cars, how to make large tunnel blasts, advantages of a cost system, hand vs. machine loading, how to remove boiler scale, etc.

There were also many items pointing to a good year for the nonmetallic minerals industries. A detailed report from the various state highway commissions indicated that the volume of highway construction would substantially exceed that of the preceding year. Another favorable factor was the certainty that Congress would pass the bill providing for $100,000,000 of federal aid to the states for highway construction. Reports from various sections of the country also indicated that the volume of other types of construction and of business in general would be higher. The prospects for car supply were better than in the preceding year.

One of the most important articles pointed out the false economy of trying to do without needed equipment or trying to get by with equipment too small for the job to be done. Then, as now, many producers felt that the prices asked for equipment were prohibitive and tried to get by with inadequate machinery. This article pointed out with examples from the field the folly of trying to economize in this manner, as the savings in first cost were soon wiped out by the higher cost of production, lost production due to breakdowns, etc. It also showed that where labor could be replaced by machinery, it was economical to do so.

Reprinted in full were the new American Railway Engineering Assn. specifications for stone ballast and washed gravel ballast. In these specifications it was recognized that, while this material is a manufactured product and consequently to a considerable extent susceptible of definite specifications, it is not feasible from a practical standpoint in many cases to obtain ideal stone from which to manufacture ballast.

Several unusual and interesting plant operating articles also appeared in this issue. One told of a "plant on wheels" operated by the Crawford Sand & Gravel Company, Inc., at Saegertown, Pa. This plant, designed by the company, was not portable in the present interpretation; it was actually a small permanent-type plant mounted on rails so that it could be moved along as the deposit was excavated. Also described was the agricultural limestone plant of the Illinois Limestone Company near Robinson, Ill.

Producers in this country are extending their operating seasons more and more into the winter to spread out the demand. For them there was a description of the manner in which a Canadian plant, the Canada Crushed Stone Corporation, at Dundas, Ontario, operated around the year. The success achieved in doing this was partly attributable to the company's convincing customers that they should extend their seasons. There was also a detailed article describing the mining of pebble phosphate in Florida.

Lone Star's District Office Transferred to Richmond, Va.

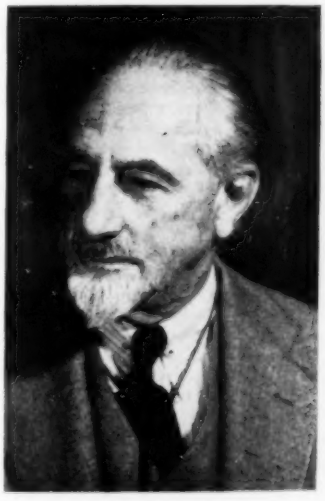
Removal of the Lone Star Cement Corporation's district office in Virginia from Norfolk to Richmond some time this summer was announced recently by company officials. Headquarters will be moved to a building purchased by Lone Star in Richmond. Dwight Morgan, vice-president and Virginia division manager, will be in charge at the new headquarters. Branch offices will be maintained at Roanoke, Norfolk, and Washington.

Officials also announced that the new plant at Roanoke, now in the last stages of construction, is expected to have a capacity of 1,400,000 bbls. of cement per year. The Norfolk plant, at present the only major cement plant in Virginia, has a capacity of 1,200,000 bbls. annually.

A.I.M.E.'s Legion of Honor Awarded to John V. Dorr

John Van Nostrand Dorr, chairman of the board of directors of The Dorr Company, Stamford, Conn., was made a member of the Legion of Honor of the American Institute of Mining and Metallurgical Engineers in recognition of his 50 years of service as a member.

The citation took place on February 21 in St. Louis, Mo., at the 171st annual meeting of the institute.



John Van Nostrand Dorr

Manitowoc Portland Cement Plans $2,500,000 Expansion

Officers of the Manitowoc Portland Cement Company, Manitowoc, Wis., recently announced that the firm would spend $2,500,000 on an expansion program. Through the additional facilities, officials stated, the plant's capacity will be increased by 50 percent. Included in the program are plans for a 340-ft. kiln and complete modernization of the dust-collecting system. Work is under way, and completion is expected on or about June 1, 1952.

The Manitowoc mill is the only cement plant in Wisconsin and is a subsidiary of the Medusa Portland Cement Company, which operates six plants in the United States and Canada.

Freeport Sulphur Report Shows Record Year in 1950

Sulphur production of Freeport Sulphur Company in 1950 was the greatest in the company's history, amounting to almost two and one-half times the 1935-39 average, according to the annual report released by John Hay Whitney, chairman of the board, and Langbourne M. Williams Jr., president.

Net earnings for 1950 were the same as the preliminary figure announced in January. After all charges, including depreciation, depletion and reserve for taxes, they amounted to $6,768,739, or $8.46 per share on the 800,000 shares of common stock. Earnings for 1949 were $5,902,314, or $7.38 per share.

The Columbia Gypsum Company has secured an $80,000 loan from the Reconstruction Finance Corporation in order to continue construction of its gypsum processing plant in the Spokane Valley near Spokane, Wash.

Cecil Lowe recently purchased the sand and gravel plant of the Tri-City Redy-Mix Company near Myrtle Creek, Ore. The plant is operating under the name of Tri-City Sand & Gravel.

Canadian Minerals Highlight A.I.M.E. Meeting in St. Louis

THE 1951 annual general meeting of the American Institute of Mining and Metallurgical Engineers was held in St. Louis at the Jefferson and Statler hotels on February 19-22, 1951, bringing together a representative cross-section of mining men from all parts of the country, and a number from foreign countries. Technical sessions were well attended, and the quality of the papers presented was exceptionally high. Willis McGerald Peirce was elected president of the institute, succeeding Donald H. McLaughlin.

The sessions of the Industrial Minerals Division which dealt with subjects of particular interest to readers of PIT AND QUARRY were very well attended and the papers elicited much discussion. At the business meeting of the division, presided over by Chairman Richard M. Foose, the following slate of officers was elected for 1951-52: chairman, A. B. Cummins, Johns-Manville Corp., Manville, N. J.; secretary, D. G. Runner, U. S. Bureau of Mines, Washington, D. C.; vice-chairman, Rocky Mountains Region, Eugene Callaghan, New Mexico Department of Mines, Socorro, N. M.; vice-chairman, Western Region, Albert Bartell, Raw Materials Survey, Portland, Ore.; vice-chairman, Eastern Region, Harold Bannerman, U. S. Geological Survey, Washington, D. C.; vice-chairman, Southeastern Region, Thomas Kesler, Cartersville, Ga.; vice-chairman, Canada, George Jenkins, Asbestos Corp., Ltd., Thetford Mines, Que.

W. M. Peirce Elected President

CANADIAN INDUSTRIAL MINERALS

Two entire sessions were devoted to the industrial minerals of Canada. As the chairman, Dr. E. S. Moore, explained, it was not feasible to have papers dealing with the minerals of all the Canadian provinces in these two sessions; so it was decided to present a general paper dealing with Canada and papers on the industrial minerals of Newfoundland, Quebec, Saskatchewan, and British Columbia on this occasion and defer the others until next year.

Canada's Wealth in Industrial Minerals, by M. F. Goudge, chief, Industrial Minerals Division, Department of Mines and Technical Surveys, Ottawa, Canada, was the first paper on the program. The author pointed out that with the present rapid rate of depletion of our best deposits to supply a rapidly expanding industrial activity, it will not be long before we must fall back upon lower grade materials, and that these materials constitute the main wealth insofar as industrial minerals are concerned. Using sulphur as an example, Mr. Goudge said that although Canada now produces only relatively minor amounts of sulphur compounds, given a change in economic conditions, which already appears to be coming, Canada could become an important sulphur producer. New discoveries and developments in the processing and utilization of industrial minerals also had an important bearing on the supply situation. Recently there have been important discoveries of asbestos, salt, vermiculite, silica, and potash in Canada. The potash occurs at depths of from 2,900 to 3,460 feet beneath the surface. This fact poses an engineering problem in its recovery, but with evidence accumulating that the deposits are exceptionally large, ways will be found to recover this valuable resource.

In his paper, *Industrial Minerals of Newfoundland*, C. K. Howse, government geologist, Newfoundland Department of Natural Resources, stated that the most important industrial minerals of the island province are limestone and fluorspar, but early development may take place in the province's resources of asbestos, gypsum, marble, pyrophyllite, strontianite, clay, granite, slate, and sandstone. The Provincial Government is presently engaged in the construction of a cement plant and a gypsum wallboard and lath plant at Humbermouth on the west coast. The important fluorspar deposits are on the Burin peninsula on the south coast and comprise more than 25 veins. The average thickness of the higher grade veins is between 4 and 5 ft., and that of the lower grade is between 15 and 20 ft., with a maximum width of 55 ft. As yet, no vein has been followed to its end either laterally or in depth. Two companies are in operation, each working one vein.

P. E. Bourret, Industrial Minerals Division, Quebec Bureau of Mines, in his report on *Industrial Minerals in Quebec* asserted that in 1950 the total mineral output of Quebec was valued at $218,000,000, of which half was contributed by industrial minerals, chief of which was asbestos with a valuation of $63,000,000. Production of asbestos totalled 866,000 tons—a new record, and constituted about 70 percent of the world's output. This production came from 9,000,000 tons of asbestos-bearing rock extracted from 13 mines worked either as open pits or as underground mines. The largest open-pit is 3,000 feet in diameter and 350 ft. deep. Underground workings have now reached a depth of 1,000 ft.

Limestone constitutes one of the most important natural resources of Quebec, said Mr. Bourret. It is widely distributed, is of high quality, and has a great variety of uses. Six and one-half million tons of limestone was quarried in Quebec in 1949. Magnesitic dolomite, brucite, mica, feldspar, silica, and ochre are worked in the areas adjacent to the Ottawa and St. Lawrence rivers. Most of the structural materials used in Quebec come from within the province. Portland cement is made at Montreal and Hull. The Montreal plant with a capacity

of 15,000 barrels of cement per day is one of the world's largest. Building and monumental stones and marbles of excellent quality are obtained from the limestones and granites. Abundant clays and shales are used for making building brick and other ceramic products. In recent years the production of sand and gravel has amounted to as much as 28,000,000 tons per year.

Asbestos Mining at the Jeffrey Mine, by Karl V. Lindell, Canadian Johns-Manville Co., Limited, dealt fully with operations at the world's largest asbestos mine at Asbestos, Quebec. This mine produces 50 percent of the Canadian output of asbestos. It is now being operated as a great open pit 3,200 ft. north and south by 2,600 ft. east and west, with seven levels in ore. Preparations are being made to operate it as an underground mine by using the block caving system. The depth of the body of asbestos-bearing rock has never been determined. The deepest hole drilled ended 562 ft. below sea level and was still in ore. The mining method now in use, known as the spiral bench method, consists of mining with power shovels outward and laterally on the various levels, which are 35 ft. apart vertically and connected by an inclined approach. Drilling is done by drills mounted on towers.

Forty percent special low-freezing gelatin is used, and on the average 6 tons of rock is broken per pound of primary explosive. Loading is done by four 4-cu. yd. electric shovels, one 5-cu. yd., and one 8-cu. yd., all mounted on crawler treads. Steam locomotives haul the material out of the pit to the gathering yard, and from this point a 100-ton diesel-electric locomotive hauls the mill rock to the mill, 3 miles distant. In preparation for underground working, a 5-compartment shaft 18 by 13 ft. 6 in. inside dimensions has been sunk to sea level, two blocks 200 by 200 ft. have been prepared for caving, and work is proceeding on the third. By June, 1951, it is planned to have three blocks caving and producing 12,000 tons of material per day.

In his paper *Saskatchewan Industrial Minerals*, A. J. Williams, director, Resources Utilization Branch, Saskatchewan Department of Natural Resources, described the province's resources of ball clay, fireclay, stoneware clay, bentonite, sodium sulphate, volcanic ash, silica sand, marl, and quartzite pebbles. He indicated that the department had carried out a lengthy program of exploration and testing of the clays, and had outlined large commercial tonnages of material of a grade suitable for export. Deep beneath the surface are vast beds of salt up to 435 ft. in thickness. One plant at Unity is extracting salt from these beds at the rate of 125 tons per day. Associated with the salt are occurrences of potash in deposits 3 to 11 ft. thick and containing the equivalent of from 11 to 21.6 percent K_2O. These deposits are of importance to Saskatchewan and to Canada and although the depth at which they occur, 2,900 to 7,600 ft., creates major problems in mining, it is possible that potash will be produced from them within the next four or five years, stated Mr. Williams.

Saskatchewan Minerals Sodium Sulphate Plant, by G. F. Miller, Plant Manager, Chaplin, Sask., described the Saskatchewan government plant for producing anhydrous sodium sulphate at Chaplin Lake. The lake, 18.6 square miles in area, contains a brine with a content of approximately 15,000,000 tons of raw Glauber's salts. This brine is pumped to three clay reservoirs, each 1,000 ft. square and with a capacity of 60,000,000 gallons each. Pumping is done in the summer when the brine is at its maximum density and contains approximately 50 percent by volume of Glauber's salts. As the temperature begins to fall, the brine becomes supersaturated, and Glauber's salts crystallize out in the reservoirs, leaving a residual brine containing only 15 percent of Glauber's salts, which is drained back to the lake. The solid bed of salt from 3 to 4 ft. in depth in the storage basin is harvested by carryall scrapers drawn by tractors and stored in heaps on the ground adjacent to the storage basins. From the storage piles the salt is taken by conveyor to the plant and fed to evaporating units, where it is heated and melts in its own water of crystallization. A flinger roll operating at high speed on each side of the evaporator throws the brine to the top of the chamber and causes it to fall like a heavy rain. Heated air at 1,700 to 2,000 deg. F. passing through the evaporators reduces the moisture in the salt from 56 percent at the time it is admitted to 28 percent when it is discharged. The salt slurry from the evaporator is passed to rotary driers 7 ft. in diameter and 60 ft. long, where it is converted to the anhydrous state and needs only crushing and screening to put it in a marketable condition.

Industrial Minerals in British Columbia and Their Relation to Power, Fuel, and Market, a paper presented by H. Sargent, chief, Mineralogical Branch, British Columbia Department of Mines, listed the industrial mineral products currently or previously produced in British Columbia — sand, gravel, stone, slate granules, limestone, clay products, cement, gypsum, sulphur, natural salts, barite, bentonite, diatomite, mica, talc, and phosphate rock. The average value per year production for the period 1945-49 was $8,765,300.

Chairman Richard M. Foose, who presided at the business meeting of the A.I.M.E.'s Industrial Minerals Division at St. Louis.

Most of the items are building materials used within the province, and are produced in or close to the southwestern part of the province, where most of the population of 1,140,000 is concentrated. Production listed as sulphur refers to the sulphur content of iron sulphate concentrates and the sulphuric acid recovered from the smoke of the Trail smelter. Recent discoveries include asbestos, dolomite, and magnesite.

Fuel, of great importance to the industrial mineral industry, is available in the coal fields of the Crowsnest Pass area and on Vancouver Island. Fuel oil is brought in by rail from Alberta and from California and South America by sea.

Another item of great importance to the industrial minerals industry is power, both because of the requirements in processing the minerals and because of the demand for them created by other industries using the power. Plants with combined capacities of 1,200,000 hp. are already built, and undeveloped sites could supply an additional 9,700,000 hp. Recent announcements indicate that the Aluminum Company of Canada, Limited, is to

M. F. Goudge, chief, Industrial Minerals Division, Dept. of Mines and Technical Surveys, Ottawa, Canada.

establish an aluminum reduction plant at Kitimat on the coast south of Prince Rupert. Obviously the establishment of such a plant will provide a market for industrial minerals, as will also the development of additional power projects in East Kootenay. In the future, when demand increases and developed power is available, industrial minerals will be produced in much greater volume in British Columbia than at present.

The Windermere Gypsum Deposit Rocky Mountains, British Columbia was the subject of a paper presented by J. W. McCammon, mineral engineer, British Columbia Department of Mines. At the property of Columbia Gypsum Company grey to pale buff gypsum is being quarried from a deposit that extends for at least 2,100 ft. and is more than 250 ft. thick. It is enclosed in limestone and is practically free from anhydrite. About 1,000 ft. to the northeast of this is another bed of similar gypsum. Gypsum has been traced intermittently for 20 miles, from Windermere to the Kootenay River. The rock as quarried runs 90 to 95 percent gypsum. The processed material makes good gypsum board and undercoat. Part of the output is shipped to cement and gypsum plants in Alberta and part to the plant of the Columbia Gypsum Company in Spokane, Wash., where it is processed for agricultural use and will shortly be made into board and plaster.

LIGHTWEIGHT AGGREGATES

A report on *Perlite in Oregon, Washington and Idaho* by K. E. Hamblen, consulting engineer, Portland, Ore., covered the position of perlite in the Pacific Northwest, and gave a brief description of the known deposits. No two deposits are quite alike, either in appearance or reactive properties. Each deposit reacts differently. The reaction temperature ranges from a low of 1,400 deg. F. to as much as 2,200 deg. F. This is usually proportional to the percentage of silica, which varies from about 67 percent to 75 percent. Except for special uses for the extremely light products in the range of 2 to 4 lbs. per cu. ft. bulk density, and the heavier aggregates in the range of 12 to 20 lbs., which are used primarily for concrete products, by far the greater use at present is for expanded perlite in the range of 7 to 10 lbs. bulk density for plaster aggregate. There are now more than 40 perlite plants in western United States, and there is sufficient known tonnage to supply any possible needs for generations.

In his talk on *Lightweight Aggregates from Kansas Clays* Norman Plummer, Kansas Geological Survey, described the work being done in Kansas on the subject. He stated that the discovery that a majority of Kansas clays would bloat was made during an investigation into the possibilities of making dense aggregates for railway ballast, etc., from them. The method of investigation is first to preheat the clay (or shale) to 1,000 deg. F. and then to subject it to the high temperature of over 2,000 deg. F. Either small briquettes are used, or the preheated clay (or shale) is charged to a small rotary kiln 17 in. in diameter and 30 in. long and there strongly heated.

Economics of the Lightweight Aggregate Industry, by V. W. Ellzey, L. C. Bailey, and R. J. Anderson, Battelle Memorial Institute, was presented by R. J. Anderson. This paper was largely statistical. In it the aggregates were discussed under two headings: (1) natural lightweight aggregates such as pumice, pumicite and scoriae of which there are 73 producers in New Mexico, California, and Idaho; and (2) processed aggregates which were again subdivided in two classes: (a) those produced from industrial minerals such as expanded pumice, perlite, shales and clays, vermiculite, and diatomite, and (b) processed waste such as expanded coal mine waste, expanded slag, cinders, sawdust and others. In conclusion, the various factors affecting the industry were discussed.

INFORMATION ON CONVEYORS

Control of Conveyor Belt Acceleration was discussed by Walter Snavely, who declared that the effect of starting acceleration on conveyor belts and its control, is a subject usually inadequately treated in existing handbooks on belt conveyor engineering. Conveyor belts cannot be safely stressed to full maximum ratings without limiting the imposed or starting tension to full load break-away, and where a belt conveyor has a reflex curve in its profile, acceleration must again be controlled under all starting conditions ranging from empty to full load, to keep the belt from lifting up at the curve during the starting period.

Mr. Snavely presented the design conditions which call for individual study of the effect of starting acceleration, as well as the calculation of the magnitude of the accelerated force, and the steps taken to dampen and hold the starting tension within allowable limits.

In his discussion of *Twisted Return Runs for Conveyor Belts* Mr. Snavely explained how the twisting of the return run of a conveyor belt now promises a simple and low-cost solution to the annoying operating problems of dribble accumulation, build-up of material on the return idler rolls, and accelerated abrasive wear on return idler rolls and belt covers, which even the best belt-cleaning devices cannot completely eliminate. On conveyors exceeding 100 ft. in centers on the return run it is entirely practical to twist the belt 180 degrees as it leaves the head pulley, and introduce a succeeding 180-degree twist just ahead of the tail pulley, thus placing the clean underside of the belt in contact with all of the return idlers.

Knowing the construction characteristics of the conveyor belt, and controlling the initial tensions imposed, said Mr. Snavely, the distance within which the twist is made can be held to a reasonable minimum without overstressing the belt edges. A mathematical basis for determining the minimum twist distance was described. He also explained the results of an experimental test conducted within a 36-in. belt in operation, which substantiate the mathematical basis. A belt conveyor installation utilizing a twisted return run will shortly be placed in operation by a well-known iron ore producer, he added.

PHOSPHATE ROCK PROCESSING

Automatic Controls in the Pumping of Phosphate Matrix at International Minerals & Chemical Corporation Mines in Polk County, Florida was the subject of a paper by H. T. Loehr, Jr.

In the Florida phosphate mines the present method of getting the phosphate matrix from the pits to the plants is by pumping it through pipe lines. Pumping distances range from a few hundred feet up to three or four miles, and for the longer distances at least one booster pump is installed. If there are several, these are connected directly in the line.

Practically all the matrix pumps in use are driven by alternating current slip ring motors, and the speed is varied by adjusting the resistance in the rotor circuits of these motors.

Until the last two or three years, all pumps in the matrix lines were handled by an operator stationed at the pump. When motor-operated cam controllers and contractor panels came into use, they provided the basis of a control that could be handled either remotely or automatically, and various mining companies began to use this feature, thus eliminating an operator and cutting costs.

The booster pumping stations have been controlled remotely by the use of control cables run from some control point to the station. One disadvantage is the necessity of running and maintaining the control cables. Moreover, the operator does not know what is happening at the booster station, and he may run the pump at an improper speed. This results in excessive maintenance on the pump and associated equipment.

The "Pressuretrol" type of automatic booster station consists of a pump, motor, primary switch or starter for the motor, secondary control for the motor and Pressuretrol switch in the suction side of the booster pump.

The secondary control consists of the following items of equipment: four contractors which short out secondary resistance for speed control; a Minneapolis-Honeywell step controller driven by a Minneapolis-Honeywell series 90 Modutrol motor; the necessary wiring and auxiliary relays for complete automatic operation; and an automatic-manual selector switch for setting up the control for either automatic or manual operation.

The Minneapolis-Honeywell step switch consists of mercury bulbs which are actuated by cams driven by the Modutrol meter. These mercury bulbs energize and de-energize the auxiliary relays and contactors for automatic operation.

A potentiometer in the Modutrol and a potentiometer in the Pressuretrol form a bridge circuit which is unbalanced by movement of the Pressuretrol potentiometer arm and re-balanced by movement of the Modutrol potentiometer arm, the movement of the latter being accomplished by rotation of the Modutrol motor. Movement of the Pressuretrol potentiometer is caused by a change in pressure.

Any time an unbalance is introduced by the moving of the arm in the Pressuretrol, the Modutrol motor will rotate until this balance has been re-established. The rotating of this motor rotates the cams in the stop switch and closes or opens the mercury bulbs in any sequence desired.

The speaker briefly described the operation as follows: the pumping station ahead of the booster station starts pumping matrix into the line and builds up pressure. This pressure acts against the diaphragm of the Pressuretrol and moves the potentiometer arm across the Pressuretrol, thus establishing an unbalance in the circuit. This causes the Modutrol motor to revolve, thus revolving the cams and actuating the mercury bulbs. The mercury bulbs close the primary oil circuit breaker, starting the pump motor, and if the speed at which the motor runs is not sufficient to relieve the pressure, the Modutrol will continue to revolve and will pull in another mercury bulb. This mercury bulb energizes the first secondary circuit to the slip ring motor. This allows the pump to speed up.

This action continues until the pump has reached a speed such that the pressure in the line is at the preset value on the Pressuretrol. When the pressure decreases in the line due to the pumping station ahead being slowed down or shut down, the Pressuretrol at the booster station acts in such a manner as to reverse the movement of the Modutrol and slow down and stop the booster pump, if necessary.

Electrical interlocks are incorporated to insure proper sequence of operation and to prevent closing of the primary switch if all the secondary resistance is not in the circuit.

J. E. Lawver discussed *Automatic pH Control in Florida Phosphate Rock Flotation.*

The beneficiation of Florida phosphate rock is generally accomplished by two froth flotation steps: first, a fatty acid float in which the phosphatic material is floated from the silica sand, followed by an amine float in which the remaining silica sand is floated from the fatty acid using amine acetate as a collector. In each of these steps the pH of the pulp must be controlled accurately in order to assure economic beneficiation.

Karl V. Lindell, Canadian Johns-Manville Company, Ltd., described operations at the world's largest asbestos mine, the Jeffrey Mine at Asbestos, Quebec.

Because changes in tonnage or caustic flow as well as change in slime content of the feed upset the pH of the pulp, close control by manual methods is impossible. International Minerals and Chemical Corporation has utilized a standard commercial electronic pH amplifier and an electro-pneumatic recording controller to solve this problem.

Tests indicate that the best results are obtained using flow type electrodes. It is imperative, however, to remove essentially all of the solids from the pulp which is passed through the electrode chamber. Several methods of filtering were tried. The most satisfactory method was to take a portion of the pulp from the cell at the feed end and pass it through a dewatering cone. The overflow from the cone is piped through the flow chamber containing the electrodes. A ratiosight alarm was placed in the cone overflow circuit. This device automatically sounds an alarm and throws the system on manual operation if the dewatering cone should become choked. The cone normally operates several weeks without attention.

WASHINGTON NEWS LETTER

Non Residential Construction Credit Control

another P-Q exclusive

AS long ago as October 12, 1950, the first attempt was made to restrain inflation by restricting credit available for construction. At that time, the restriction applied only to one- and two-family houses.

On January 12, 1951, the restrictions were extended to include three- and four-family houses and multi-unit residences. On February 15, 1951, the final step was taken when the regulation was extended to include non-residential construction. The amended regulation now includes new construction of office buildings, warehouses, stores (including sales display and service facilities, whether wholesale or retail), banks, hotels, motels, motor courts, garages, automobile service stations, restaurants, theatres, clubs, and other new structures used for non-residential purposes.

Loans on such structures are limited to 50 percent of their value. Maturities are limited to 25 years and amortization is required.

There is no doubt that this will have a substantial effect on the construction industry. There are, however, some areas in the construction field which will not be affected by these restrictions. Employers in the construction or related industries will be especially interested in these exempted areas.

While no special provision has yet been made to facilitate new construction in areas affected by the development of the defense program, the Federal Reserve Board promises that "an amendment to the regulation will be issued as soon as practicable under which different terms may be permitted with respect to projects or structures, in limited areas, which may be designated by the appropriate authorities as necessary in the defense program".

Also, certain classes of construction are now exempt from the regulation. They include schools, hospitals, churches, public utilities, and property constructed for use by the government or any political subdivision.

Finally, there is the greatest exemption of them all. New construction is exempt if it is for use by manufacturing or mining businesses or for farm uses if more than 80 percent of the floor space of the new building is employed

(1) in processing materials, goods or articles into finished or partly finished manufactured products,
(2) in mining or otherwise extracting raw materials, or
(3) on farm property in the production, shelter, or storage incidental thereto, of crops, livestock or other farm products.

The Federal Budget and Rearmament

Now that there has been time to digest the tremendously complicated budget submitted by the President earlier this year, it is possible to see how much the nation's planned rearmament is likely to cost.

In the fiscal year which ended on June 30, 1950, we spent $17,600,000,000 on national security. In the current fiscal year that amount has been increased by $7,000,000,000 to a total of $26,800,000,000. In the next fiscal year, running from July 1, 1951, to June 30, 1952, that amount will be increased by a further $24,400,000,000 to a total of $52,300,000,000.

Even now it is possible to know that in the following fiscal year, running from July 1, 1952 to June 30, 1953, no substantial decline can be expected. That year will begin with outstanding unexpended authorizations amounting to $75,000,000,000. Here is a quick run-down on what these large amounts of money are going to buy.

First of all, the military expenditures are only designed to cover a continuing armed conflict not much greater than that in Korea. It will also buy somewhat more adequate general preparedness. If the Navy program for the construction of submarines or minesweepers or Universal Military Training is approved, additional expenditures will be required.

Second, $4,500,000,000 will be spent the fiscal year ending June 30, 1951, and $7,000,000,000 will be spent in the fiscal year ending June 30, 1952, for arming the Atlantic Pact nations and other cooperating countries.

Additional funds will also be spent for expanding our atomic energy program, for the stockpiling of strategic materials, and for administering the economic stabilization program.

By S. HERBERT UNTERBERGER

Revenue Sources Inadequate to Meet Budget

In the fiscal year ended June 30, 1950, federal budget expenditures totalled 40 billion dollars and budget receipts totalled only 37 billion dollars. The federal government ran 3 billion dollars into the red.

In the fiscal year ending June 30, 1951, federal budget expenditures are likely to run $47,000,000,000 and receipts will probably run about $44,500,000,000. We will probably run only $2,500,000,000 in the red.

In the fiscal year ending June 30, 1952, federal budget expenditures of $71,500,000,000 are being planned. At present tax rates, receipts are likely to total only $55,000,000,000. This would leave a deficit of $16,500,000,000.

Taxes

Thus far the President has recommended taxes which should raise about $10,000,000,000 of the $16,500,000,000 required to balance the 1952 fiscal year budget. His program is designed to raise $4,000,000,000 by raising individual income taxes, $3,000,000,000 by raising corporation income taxes and $5,000,000,000 from new or increased excise taxes.

The Truman program is to add 4 percentage points on each income tax bracket. On a percentage basis, the big increase under that plan falls on the lower income groups. At $2,000 of net income, the amount of taxes would rise by 20 percent. At $50,000 of net income, the amount of taxes would rise only 10 percent.

The representatives of the low income people, particularly the labor unions, are already complaining bitterly about imposing additional taxes on people already hard hit by rising prices.

On the other hand, people at the top of the income scale are already paying tax rates as high as 87 percent, and under Mr. Truman's plan, that would go to 90 percent. Furthermore, even taxing away all their income would not raise enough money to cover the deficit. The merits of increased corporation and excise are also being debated vehemently.

Congress is faced with the same old problem, but now it is in an

(*Continued on page 96*)

Cummins® Custom-built Diesels

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Best buy in power is the engine that's built best

Cummins Diesels have an outstanding record *and* reputation in a wide range of Diesel applications. And here's one reason!

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Utah Sand and Gravel Products

By WALTER E. TRAUFFER

This new 200 t.p.h. sand-gravel and ready-mix setup has solved many problems of zoning, increased demand, and distribution in Salt Lake City.

another ON THE SPOT report

THE Utah Sand and Gravel Products Corporation of Salt Lake City, Utah, has made the headlines on numerous occasions during the past 30 years or more with outstanding new sand and gravel, ready-mixed concrete and railroad ballast plants, and important additions to such plants. The occasion for this article is an entirely new installation by this company consisting of a modern and efficient 200-ton-per-hour sand-and-gravel plant and a central ready-mixed concrete batching plant of the same caliber. These operations give the company much better distribution in the Salt Lake City metropolitan area and considerably improve its competitive position. The new plant went into operation in September, 1950.

A brief resume of the history of this company, which has for many years been one of the most important producers in the Rocky Mountain area, will give the reader some idea of its activities. The firm was founded in 1918 by Eric W. and William E. Ryberg, brothers. Its first sand and gravel plant was erected in North Salt Lake City, and this location has remained its headquarters and home office since that time. This original plant, known as the Utah plant, was operated with periodic additions until 1939, when due to its high location on the mountain side, with resulting high operation costs, it was dismantled in favor of a new location on the valley floor. The new operation, known as the Stauffer plant, had been opened some years before in anticipation of this development, and this plant was expanded in 1941 to a capacity of 200 t.p.h. to take over the full production load. The Stauffer plant has been continually improved and is modern in every particular. A feature of it is the use of hot underground water for washing purposes.

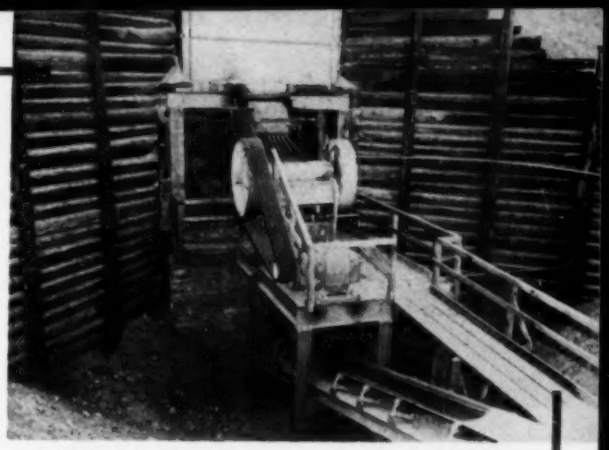
In 1937 the company entered the ready-mixed concrete business at the North Salt Lake location. Late in 1948 the pioneer batching plant was abandoned in favor of a large new central-mixing plant

in the same location, including a 5-cu. yd. T. L. Smith tilting plant mixer. This plant was designed by the Conveyor Company and is one of the finest in the western part of the United States. In 1949 the company set up a semi-portable ready-mixed concrete batching plant at Fort Douglas near Salt Lake City to supply concrete for a large veterans' hospital being erected there and for nearby civilian needs. These two plants, with the newer one at Butlerville, make it possible for the company to supply the entire area with comparatively short hauls.

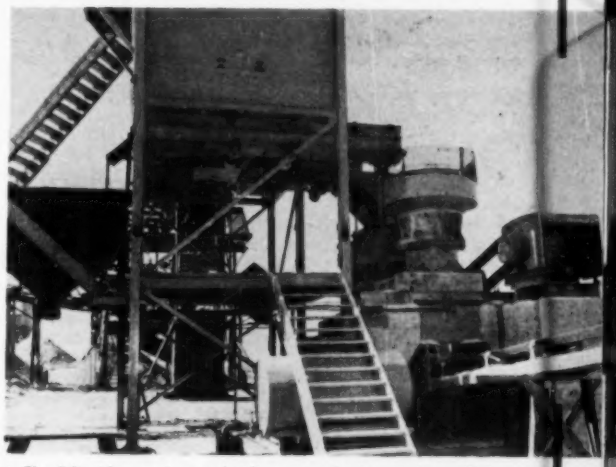
The company for many years has also been supplying prepared gravel ballast to several railroads in the West. In 1935 a modern ballast processing plant was built at Sand Pass, Nev., and in 1940 a 650-t.p.h. ballast plant was built at Evanston, Wyo., this being one of the largest such plants in the country. In 1945 the Sand Pass plant was moved, enlarged, and set up at Rockland, Nev., where it is still in operation. The Evanston plant operated until 1948, when, upon completion of its contract, it was dismantled and sold.

The operations at North Salt Lake City through the years took care of a large part of the needs of the area but gradually, as the city expanded to the south, an ever growing demand for aggregates and ready-mixed concrete came from there. As a result the average hauls not only became longer but they also had to be made through the heavy traffic of the business district. It had been realized for some time also that the home deposit so favorably located to serve the heart of the city's industrial area was not inexhaustible and that it would be extremely unwise to deplete it by hauling to areas outside, where more plentiful supplies of material existed.

The new deposit selected, near the community of Butlerville, is located 12 miles southeast of downtown Salt Lake City. It is just outside a zoning area but it became apparent at the outset that community opposition had to be resolved or very serious trouble would result. Instead of trying to force its way through this opposition and threatened litigation, company officials held several conferences with neighboring property owners, and an amicable settlement was reached which, it is confidently believed,



• The 24- by 40-in. primary jaw crusher with its bin and reciprocating plate feeder. Grizzly fingers on the feeder bypass minus 3-in. gravel direct by chute to the belt conveyor under the crusher.



• The 2-ft. 4-in. gyratory and 4-ft. cone reduction crushers which receive oversize gravel — plus 3-in. and 1½- to 3-in., respectively — from the bins under the scalping screen via the reciprocating plate feeders.

• This view of the ready-mix plant shows the manner in which aggregates are spouted to the plant and truck-loading bins. The elevator spout is for future additional cement storage.

will satisfy conflicting interests and create good will rather than animosity. The company agreed to erect a neat, well-painted plant and maintain the premises in presentable condition. The plant is to be operated with the minimum of noise and only during day-light hours, except in emergencies. It is to be operated so as to minimize dust, and access roads are to be paved. It was agreed that trees would be planted along an elevated dike located between the plant and nearby homes, this dike serving as a dam to form the water supply area.

The plant, when visited late in 1950, was an unusually attractive operation, although many of the finishing touches had not yet been made. All danger of dust nuisance has been eliminated by enclosures in some places, supplemented by the use of the water which washes the sand and gravel. The equipment used is all of the latest type, selected not only for efficiency and economy but also for quietness of operation. The company's policy, like that of most successful producers, has always been one of trying to forestall disagreements with neighbors and compromising them when they did occur. Its management has always been fully aware of the value of public good will and its reputation was largely responsible for the permission to build and operate a plant at this location.

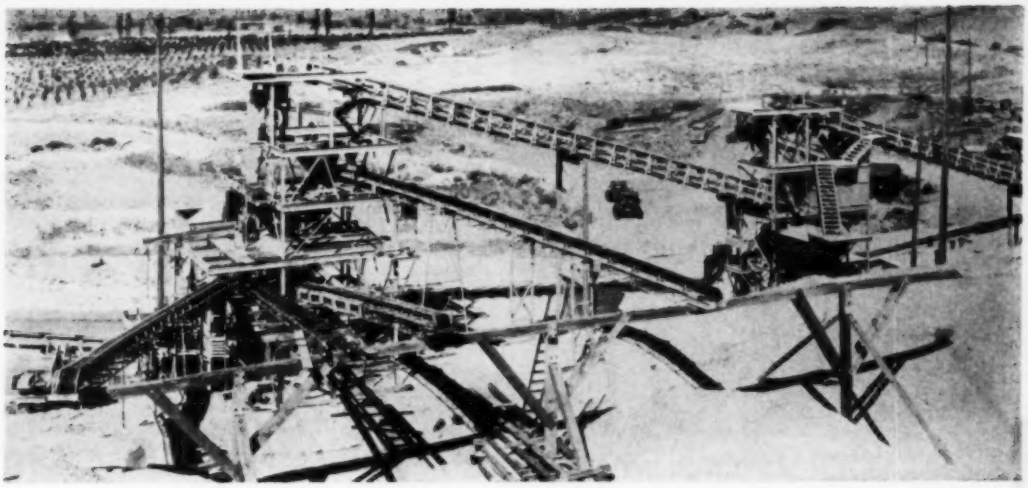
The deposit consists of 70 acres near the mouth of Big Cottonwood Canyon; it is estimated to contain enough material for at least 25 years' operation of the plant. The deposit is a part of an alluvial fan within the boundaries of what was once lake Bonneville. The overburden is light, so, instead of possibly creating some dust by stripping, it is run through the plant with the aggregates and washed out. Actually, the material is so clean that even with the overburden in it, all specifications are easily met. The material ranges from occasional boulders up to 24 in. in diameter down to plaster sand, with very close to a natural grading, and it is known to exist to a depth of 150 feet.

Most of this material is above the plant level, simplifying the problem of excavation. At present, while the deposit is being opened, a 3-cu. yd. drag scraper feeds the material direct to the plant hopper. When the haul reaches about 500 ft., the scraper will be moved farther out with conveyors to the hopper. This method is as nearly dustless as possible, and the deposit is ideal for scraper reclamation. The scraper is operated by a Lambert 2-drum hoist driven by a 15-hp. electric motor. A timber head tower is used, and the tail end of the scraper cable is fastened to a sling between two buried "dead men" in the pit. The latter are so arranged that the scraper can be swung in an arc of 90 degrees before it is necessary to relocate.

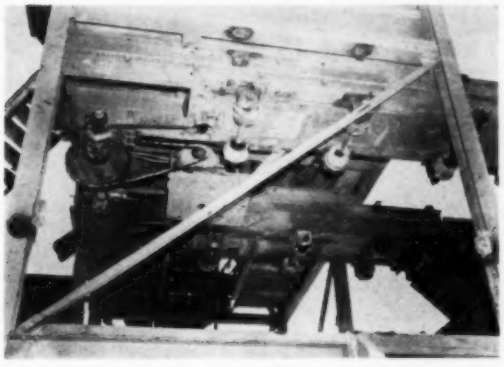
The scraper discharges the sand and gravel into a 12- by 12-ft. steel hopper under which is a reciprocating plate feeder with projecting fingers acting as a grizzly. This feeds plus 3-in. material into the 25- by 40-in. Cedarapids primary jaw crusher and bypasses minus 3-in. material onto the belt conveyor under the crusher. This inclined conveyor is 30 in. wide by 100 ft. long and leads to an 8- by 8-ft. steel transfer hopper from which a 30-in. by 170-ft. inclined belt conveyor carries the material to the top of the screening structure. There the material is discharged on a 2-deck, 4- by 12-ft. Pioneer vibrating scalping screen. This has 3-in. openings on its top deck and ⅛- and 1½-in. on its bottom deck. The plus 3-in. oversize drops into a 6- by 12-ft. surge bin and is discharged by a reciprocating feeder into the 2-ft. 4-in. Traylor gyratory secondary crusher. The 1½- to 3-in. gravel off the bottom deck goes into an identical surge bin and via another reciprocating feeder into a 4-ft. Symons standard cone crusher. A 24-in. by 170-ft. belt conveyor carries the products of both crushers back to the transfer hopper and back to the screen in closed circuit.

The minus ⅛-in. material (plaster sand) through the bottom deck of

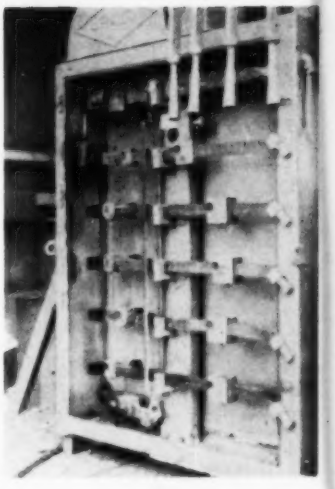
• A closeup showing the final sizing screens and conveyors to the stockpile. In the foreground is the screw washer-dewaterer. The chute, conveyor, and bin for loading out blended gravel are at the left.



• A general view of the plant, with the stockpile in the foreground. The four radial stockpiling conveyors are supported on a timber framework.

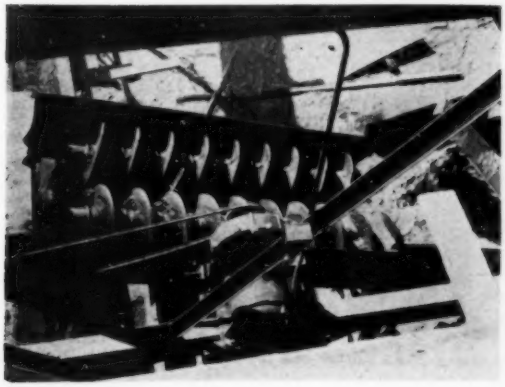


• Left: The two reciprocating plate feeders which discharge plus 3-in. and 1½- to 3-in. materials from the bin into two reduction crushers.

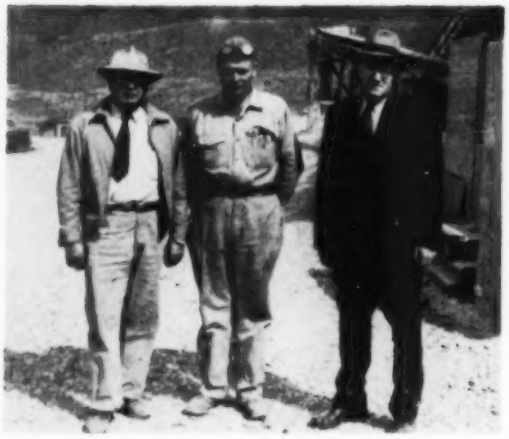


• Right: The beam scales in the ready-mix plant for batching cement and aggregates into the truck mixers.

• Looking down into the twin-screw washer-dewaterer from which concrete sand is discharged by conveyor to stockpile.



• The final sizing screen, equipped with washing sprays. Space has been left for a second screen when needed.



• Left to right: Kenneth Curtis, general superintendent; Rex Baird, plant superintendent; Ezra C. Knowlton, executive vice-president.

this screen can be discharged into a small steel bin for direct loading into trucks or it can be discharged onto an 18-in. by 100-ft. stockpiling belt conveyor for storage over the reclaiming tunnel.

The ⅛- to 1½-in. material through the last half of the bottom deck of the scalping screen is carried on a 30-in. by 100-ft. inclined belt conveyor to the top of the final screening building. There the material is discharged onto a 4- by 12-ft. Pioneer vibrating screen with two decks, only one of which is now used. This now has 1-in. openings. It is at this screen that water is first used. Under this screen there is space for two final sizing screens to take care of any possible future requirements, but only one is now needed. This is also a 2-deck, 4- by 12-ft. Pioneer screen.

The 1- to 1½-in. gravel off the top deck of the first sizing screen is carried on an 18-in. by 100-ft. belt conveyor to storage over the reclaiming tunnel.

The minus 1-in. material is chuted to the final screen, which has ⅜-in. clear opening wire cloth on the top deck and 4-mesh cloth on the bottom deck.

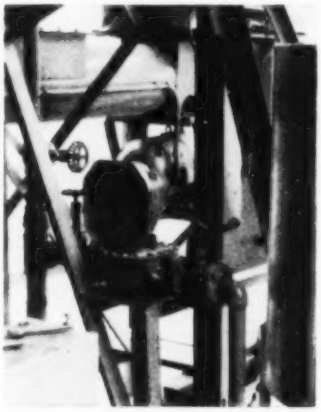
The ⅜- to 1-in. gravel off the top deck of this screen is carried on an 18-in. by 100-ft. stockpiling conveyor to storage over the tunnel. If desired, some of the No. 4 to ⅜-in. material can be bled into it on the conveyor for 1-in. to No. 4 gravel, for which there are occasional demands.

The No. 4 to ⅜-in. gravel is separately stockpiled over the tunnel by another 18-in. by 100-ft. belt conveyor. This size is sold as chips for bituminous seal coat or for asphalt roofing.

The minus 4-mesh material through the bottom deck of the final sizing screen is split between a 48-in.-wide Pioneer sand drag and an Eagle washer-dewaterer with two 20-in. screws. The concrete sand from both units is carried on a 30-in. by 90-ft. conveyor to a pile over the reclaiming tunnel. When running dry ¼-in. cloth is used on the bottom deck of this screen and a gate is flopped to feed the dry sand direct onto the stockpiling conveyor. Washed sand can, if desired, be loaded into trucks from the stockpile by clamshell crane.

The reclaiming tunnel under the stockpiles is 160 ft. long overall and consists of 8-ft. dia. corrugated "Multiplate." The discharge points of the storage conveyors are 30 ft. above the top of the tunnel, giving a total storage capacity of 3,500 tons of the six sizes stored. The storage materials are reclaimable through a double clamshell gate in the top of the tunnel, and these six gates will be operated by air cylinders controlled from the batching plant.

The 24-in. by 360-ft. tunnel reclaiming conveyor to the top of the batching plant discharges the aggregate as desired into any of six 12- by 12-ft. truck-loading bins or into any of the four 10- by 10-ft. bins of the Noble semi-portable ready-mixed concrete batching plant. Trucks are loaded under the first-mentioned six bins through clamshell gates. Space has been provided for ground stockpiling, and all aggregate shipments will be weighed on a 60-ft. Fairbanks platform scale.



• The ready-mix water-measuring tank and meter, and the cement screw to the batcher.

The ready-mix plant has a 2,000-cu. ft. bulk-cement storage silo and the foundation is in place for a second silo of 1,200-cu. ft. capacity. The bulk cement is received in special bulk trucks, some of which are equipped with Airslides for unloading. The cement is carried by a screw conveyor and an elevator into the silo, which is mounted on a steel framework. Another screw conveyor feeds the cement from the silo to the Noble 2-cu. yd. weighing batcher. The aggregates are fed from the bins into the batcher through lever-operated gates. The batcher has beam scales and water is measured by volume in a separate tank.

The company now operates a fleet of 21 truck mixers which serve its three ready-mix plants. These are about evenly divided between Jaeger and Challenge machines and all are of 5-cu. yd. capacity. Sand and gravel is delivered in owner-operated trucks.

Water for all operations comes from the pond previously mentioned, which is supplied from an irrigation ditch. The 1,000-g.p.m. Fairbanks-Morse 3-stage pump, driven by a 50-hp. motor, supplies the plants. There is also a settling pond into which all waste water flows and from which the clean water overflows back into the pond. The water supply is limited and is therefore re-used many times.

The entire operation was designed by the Stephens Adamson Mfg. Co. in cooperation with the company's staff. S-A conveyors and feeders are used throughout. Construction was supervised by the company's operating staff. Special attention was paid to safety. All drives are guarded, railings are provided where necessary, stairways are provided in place of the usual ladders, etc.

Eric W. Ryberg, who served as president of the company during most of its life, has recently retired. Present officers of the Utah Sand and Gravel Products Corporation are: J. Eastman Hatch, president; Ezra C. Knowlton, executive vice-president; A. P. Kibbe, secretary; Eric C. Ryberg, treasurer. Kenneth Curtis is general superintendent of all the company's operations, and Rex Baird is superintendent of the Butlerville plant.

MEN OF THE INDUSTRY—

Ted Dunham, Master of Many Trades

TED DUNHAM, according to one of his associates, has ". . . a more intimate knowledge of more different types of business than any man I have ever known," a statement that describes well the talents of one of the outstanding men in the pit and quarry industries. For during the last 25 years Ted Dunham has successfully operated ready-mixed concrete, concrete pipe, limestone, gypsum, aggregates, lumber, steel products, machinery, and even ice cream businesses.

Ted (and he was christened just that way) was born on March 29, 1907, in Seminole, Okla. He launched his career at the age of 19 in Crescent, Okla., in the lumber business, and two years later, in 1928, was owner and operator of the Crescent Lumber Company. Ted had picked a good locale (right in the middle of the Oklahoma oil boom), for he soon had five retail lumber yards throughout the state. He stayed with this lumber business until 1937, when he sold out at a good profit.

While in Oklahoma, Ted had noticed the possibilities of the ready-mixed concrete business, then in its infancy. Having no other business interests at the time, he canvassed the Southern states with the idea of starting in the ready-mixed concrete field. He finally settled on Baton Rouge, La., and together with an old friend, James Anderson, started the Anderson-Dunham Concrete Company in 1937. Anderson resided in Texas, so Ted was the active manager, as well as partner. The operation was successful from the very start, and a couple of years later Dunham bought out his partner. The firm operates to this day under the name of the Anderson-Dunham Concrete Company, Inc. This concrete plant, one of the largest and most modern in the country, has a fleet of 50 trucks and a capacity to produce and deliver 1,000 cu. yds. per 8-hour day. It is also one of the largest producers of concrete pipe in the state.

Never one to stand still, Ted extended his ready-mixed concrete operations to Lake Charles, La., founding there in 1939 the Dunham-Price Company. Also a producer of concrete pipe, this company is organized and operated almost as a duplicate of the parent Anderson-Dunham Company. Rowland Price, another old friend, actively managed the business at Lake Charles. The Dunham Pure Ice Company was also started in 1939, handling retail ice, ice cream, and staple groceries.

It was quite natural that Ted Dunham would join the Air Force soon after Pearl Harbor; he had been a licensed pilot since the early '30's. He did a lot of flying during the war and was Commanding Officer at various Air Transport Command bases, including Birmingham, Ala., Bismarck, N. D., and Edmonton, Alta., Canada.

After the war Ted returned to Baton Rouge and began a really big expansion of his business interests. This included the founding of the Dunham-Pugh Company, which is the Louisiana distributor for such concerns as International Harvester, J. D. Adams Company, Harnischfeger, etc. The Dunham-Wilson

Ted Dunham

Company, started in 1946, manufactures metal pipe and operates as a distributor for various steel products. The Price-Dunham-Fenet Company was organized in Lake Charles, La., in the same year and is engaged in the manufacture of bricks. In 1948 the Lindley Drilling Company was founded in Edmonton, Alta., Canada. As might be imagined, Ted could not get wholly away from the oil business. With his knowledge of oil and of the Alberta area, it was inevitable that he would be found there when oil was struck.

By this time Ted had almost, but not completely, covered the building field. He rounded out his interests by forming the Dunham Sash and Door Company at Shreveport, La., the Gulf Sash and Door Company at Lake Charles, La., and the United Sash and Door Company at Baton Rouge. These were organized in 1949. All are typical wholesale lumber yards, enjoying tremendous success since their very beginning.

With such far-flung interests, it is natural that Ted would utilize his flying abilities. He now owns a Twin-Beech and a Beech Bonanza which he uses almost continuously to visit his different enterprises.

During 1949 the Anderson-Dunham Concrete Company acquired a limestone deposit in Winnfield, La. This tied right in with the Asphalt Division of the company, which had started operating just a few months earlier. Tests were made of the area, and it was found that in addition to limestone, the Winnfield quarry also contained a very fine gypsum deposit. Today approximately 25 carloads per week of gypsum are being shipped to many large cement manufacturing concerns. About 35 carloads of limestone go to Louisiana consumers every week.

During the latter part of 1949 and the early part of 1950 the Dunham Concrete Company was founded. It is a ready-mix operation and has plants in Shreveport, La., and Albuquerque, N. M. Aggregates for the Dunham Concrete Company in Shreveport are supplied by the Dunham - Stevens Gravel Company at Pollock, La., formerly the LaSalle Materials Company, which Ted took over in July, 1950.

Even with such a multiplicity of business interests, Ted somehow finds time for relaxation on his ranch, the "Kings-X" in Trinidad, Colo., where he has a fine herd of Herefords.

Still in his early forties, it is anyone's guess as to just what business venture Ted will add next to the Dunham empire, for he is obviously not one to be found "asleep at the switch." But whatever and wherever these ventures might be, judging by past experience, they will certainly be successful.

"Retired" Californian Operates 2,000-Bag-per-Day Perlite Plant

By HARRY F. UTLEY

another ON THE SPOT research

THE production of expanded perlite was the one thing farthest from the mind of Antonio J. Almeida of Berkeley, Calif., a couple of years ago. As a matter of fact, he'd never even heard of the stuff. Founder and still president of Linoleum Sales Company in Berkeley, his floor-covering business had prospered mightily, to the point where Tony and his wife, Margaret, had decided to retire, leaving the management of the flooring business to their son, Kenneth, a 25-year-old Navy veteran.

A run-down 272-acre vineyard and ranch in picturesque Conn Valley in Napa County seemed just the spot for retirement with its 5-bedroom ranch-house, an abandoned winery building, and the rolling hills. So the Almeidas bought the place and made preparations to take life easy. That idyll was interrupted after a few short weeks when a University of California geology field team, exploring in the vicinity, discovered that the high hill behind the house was actually a mountain of 125,000,000 tons of perlite ore!

It was all quite baffling to Tony but now, with time on his hands, he prospected the deposit, shipped samples away for testing, and the results were uniformly good. He visited numerous perlite-popping plants until he made up his mind what he wanted. He studied markets, particularly plaster. Everywhere he found nothing but enthusiasm for the new product. So Perlite Aggregates, Inc., was born.

At the outset, he was determined to produce a high-quality product, tough and strong, of the proper gradation and lightness, with the minimum of undesirable fines. The old stone winery building on the property was still as sound as a dollar and, after a little remodeling, provided an ideal plant structure. A complete perlite processing plant was ordered from Muehleisen Perlite Process, Inc., Ft. Worth, Tex., and the Straub Manufacturing Company, Oakland, Calif., designed and equipped the crushing and screening plant. The quarry was opened and access roads were graded. Production officially started on April 10, 1950, and after a few brief trial runs the plant went on a 24-hr. 7-day week schedule. There have been few interruptions to around-the-clock operations since that time.

Raw rock, trucked down to the plant hopper, is first put through a Kue-Ken No. 25 Simplex jaw crusher powered by a 15-hp. motor, the product being elevated to an Overstrom 3-deck enclosed screen. Plus 10-mesh ore rejected by the top deck is spouted to a bin feeding a Kue-Ken No. 18 Gyracone crusher in closed circuit with the screen. Material in the 10- to 50-mesh range is spouted to storage. Minus No. 50 ore ordinarily passes to waste, and under no circumstances are any minus-100 fines ever processed. Mr. Almeida's research in the plastering field convinced him that fine material is quite undersirable in perlite plaster aggregate, and his Kue-Ken crushers were selected principally for that reason, the absence of rubbing action permitting reduction to the medium-fine range without the annoyance of too many extreme waste fines.

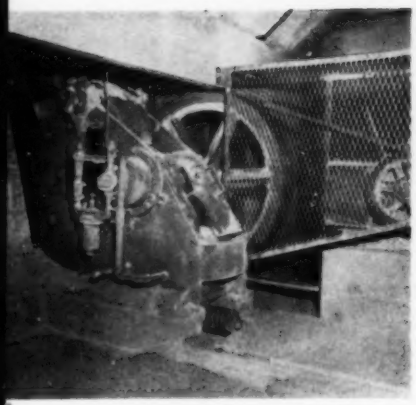
An elevator feeds the sized raw perlite to the Muehleisen processing plant in the main part of the structure. Essentially, the plant, an all-steel unit, consists of a preheating furnace, the calcining, or "popping", kiln, air separators, and bagging equipment. Preheating the sized raw material takes about 10 seconds at about 1,000 deg. F., the preheater discharging directly into the kiln. The material expands in the kiln at 1,980 deg. and is drawn into the two air separators tied into a cyclone collector. Operations are completely automatic, with Brown electronic instruments controlling temperatures in both preheater and kiln at the predetermined level. Firing is done with pressurized oil. The product is packed in 3-cu. ft. paper bags and trade-marked "Alvolite".

Production has been running in the neighborhood of 900 bags per day, but demand has consistently exceeded capacity, and output will be more than doubled with the installation of a second complete Muehleisen unit, which is probably now in production. The second unit has somewhat greater capacity than the original equipment, enabling the plant to turn out 2,000 or more bags per day after the enlargement program has been completed. There is sufficient crushing, screening, and storage capacity on the raw end to handle the increased production.

Mr. Almeida is his own best salesman and is contagiously enthusiastic when extolling the merits of his perlite aggregate. He spends a great deal of time on the job demonstrating the proper application of the lightweight plaster to tradesmen, architects, and builders. "They're all interested in using a product that

(Continued on page 100)

• This 100-year-old winery building now houses the modern plant of Perlite Aggregates, Inc., near St. Helena, Calif. Some of the finished bagged product has been trucked outside, ready for loading.

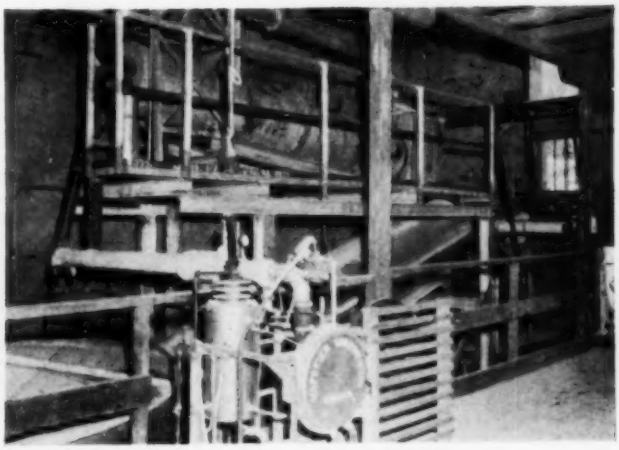


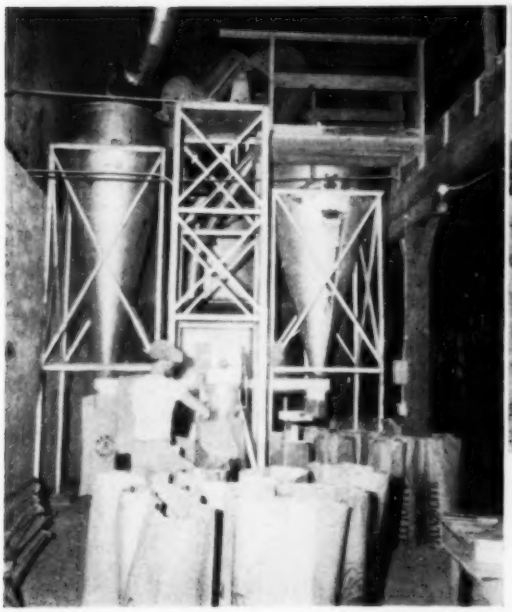
• Left: The primary crusher is driven through a flywheel by a 15-hp. motor.

• Right: The secondary crusher is in closed circuit with the screen. It reduces the raw perlite to minus 10-mesh.

• Below, left: This three-deck sizing screen is totally enclosed to eliminate dust.

• Below, right: This view shows the pre-heater and the kiln which pops the perlite.





• The company's special truck-trailer ready to take off for San Francisco with a capacity load of 980 bags of perlite plaster aggregate. It represents about a half-day's output.

• Left: Air separators and bagging spout on the processing unit. The second complete unit is being installed to the right of this equipment.

N. S. G. A. Meets In New Orleans

Top Notch Program And Mardi Gras Atmosphere Draw Record Attendance For Non-Exhibit Year

another ON THE SPOT report

THE 35th Annual Convention of the National Sand and Gravel Association at New Orleans, La., will go down in history as one of the most successful ever held by this group. In every possible way this convention supplied in full measure the many things people went there to get. For the serious-minded producers—and these predominated—there were meetings at which the latest information could be obtained on their many current problems, ranging from papers and open forums on operating methods and technical sessions to the latest information on legal and governmental developments as they affect this industry.

The choice of New Orleans was an ideal one from the standpoint of entertainment and relaxation from the strenuous all-day meetings. The weather was excellent most of the time, giving all an opportunity to see the many historic and scenic beauties of this most romantic of United States cities. The Vieux Carre, with its numerous attractions, especially the famous French and Creole restaurants, was especially well patronized. There was an outstanding program of entertainment for the ladies which will be more fully described elsewhere in these pages. A feature also was the boat trip around the harbor on Wednesday night. Jahncke Service, Inc., were hosts for the meeting and showed all the true meaning of

H. J. Zabel, Acme Materials Co., Phoenix, Ariz., and Colonel W. E. Potter, assistant chief, U. S. Army Corps of Engineers, who spoke briefly about government specifications at one of the sessions.

Left to right: Albert Shiely, J. L. Shiely Co., St. Paul, Minn.; R. N. Coolidge, Cumberland River Sand Co., Nashville, Tenn.; and J. R. Hill, Gifford-Hill & Co., Inc., Dallas, Tex., at the Jahncke Estate outing.

For 35th Annual Convention

Southern hospitality, Paul Jahncke Sr., Paul Jahncke Jr., and Herbert G. Jahncke and their ladies taking the leading roles. A treat never to be forgotten was the outing on Sunday at the Jahncke estate north of New Orleans to which the members of the boards of directors and their families were invited. It was only fitting that the attendance at this convention totaled 1,280, a new high record for a non-exhibit year. The attendance of 475 ladies also set a new record. Of the 550 producers present, 131 were producers of sand and gravel only, 265 were producers of ready-mixed concrete only, and 154 were producers of both.

Officers Re-elected to one-year terms as president, vice-president, and secretary-treasurer, respectively, were Harris N. Snyder (Buffalo Slag Co., Buffalo, N. Y.), Albert R. Shiely (J. L. Shiely Co., St. Paul, Minn.), and John W. Murphy (Union Sand & Gravel Co., Spokane, Wash.). In addition to these gentlemen, the members of the executive committee for 1951 include Robert H. Baker (Dixie Sand & Gravel Corp., Chattanooga, Tenn.), E. Phil Gemmer (Texas Construction Material Co., Houston, Tex.), Donald D. Reynolds (Boston Sand & Gravel Co., Cambridge, Mass.), and Roy E. Weaver (The Lincoln Sand & Gravel Co., Lincoln, Ill.).

Coming Conventions At the annual meeting of the board of directors of N.S.G.A. on Monday morning, February 12, it was decided that the next board meeting would be at The Greenbrier, White Sulphur Springs, W. Va., October 1, 2 and 3, 1951, in conjunction with the meeting of the N.R.M.C.A. board.

The original plans for the 1952 annual convention and machinery exposition had called for consecutive weeks in cooperation with the National Crushed Stone Assn. and the Agricultural Limestone Institute late in February and early in March at the Stevens Hotel, Chicago. Many members of the associations and of the Manufacturers' Division objected to this as the late date would prevent some operating men from attending. It was announced that a single week was open at the Stevens in January, 1952, and the board voted to consider holding the convention and exposition then, independently of N.C.S.A. and A.L.I.

It was announced at this meeting that the 1953 joint convention of N.S.G.A. and N.R.M.C.A. was still scheduled for San Francisco at the Fairmont Hotel but that there was some doubt that the weather would be suitable early in February. The board decided, and the N.R.M.C.A. board later concurred in the decision, to investigate the possibility of a later date. The 1954 con-

Left to right: J. E. Keeton Jr., Thomas Foundries, Inc., Birmingham, Ala., and H. J. Bellamy and W. W. Roberts, both of Concrete Materials Co., Waterloo, Ia.

Left to right: Herbert Cook, Corps of Engineers, Clinton, Miss., Mrs. Cook, C. E. Wuerpel, Marquette Cement Manufacturing Co., Chicago; and J. R. Gilbert, Corps of Engineers, Washington, D. C.

Sam Fowlkes, New Orleans Convention Bureau, New Orleans; John Roberts, Southern Materials Co., Inc., Richmond, Va.; F. J. Cloud, W. R. Bonsal Co., Lilesville, N. C.; and F. E. Bellamy, Concrete Materials & Construction Co., Cedar Rapids, Ia.

Robert J. Potts, past president of N.S.G.A., and Mr. and Mrs. E. P. Gemmer, Texas Construction Material Co., Houston, Tex.

vention and exposition schedule, tentatively slated for Cleveland, is still open, and a very persuasive invitation was extended to hold it in Miami early in January, when off-season hotel rates are still in effect. New facilities in Miami will ideally take care of conventions and exhibits of any size. Both boards decided to study this proposal before making a definite decision.

President's Address Harris N. Snyder, president of the N.S.G.A., opened the general sessions of the convention Tuesday morning with a re-appraisal of the value of the association. Referring briefly to the growth of the sand and gravel industry, Mr. Snyder noted that the early usefulness of its materials for ballasting railroads and for replacing dirt roads with all-weather ones has advanced steadily up to today's major usefulness in cement concrete of all forms, in bituminous mixes, in filter media, and in some chemical processes. In volume, he continued, our progress may be indicated by comparing the 1910 production of 69,410,436 tons to the 1949 report of the United States Bureau of Mines, which reported a total of 319,104,000 tons.

C. W. Shirey, C. W. Shirey Co., Waterloo, Ia., and Morgan R. Butler, Butler Bin Co., Waukesha, Wis.

"In 1911," Mr. Snyder recalled, "certain of the producers of that era recognized that there was value to be realized in getting together and discussing their common problems, and thus our association was formed." The reasoning behind this organizational effort is even more relevant today, he continued, for "the sand and gravel business, like most natural resources, is hazardous". Citing a personal example of these hazards, Mr. Snyder told how his company had purchased a going plant and lease where the sand was the standard by which others in the area were judged. "Then came a change in specifications," he said, "with certain requirements to be met after the sand was subjected to the salt tests and a rational analysis, and this sand didn't meet the new requirements. What could we do? We turned to the association for advice, and Stanton Walker (N.S.G.A. director of engineering) reviewed with us our problem, suggesting certain equipment that might be, and later was used to eliminate the material in the deposit that was causing our difficulty."

"I am sure there are many instances where changing specification requirements have given you concern for the safety of your investment," Mr. Snyder said. "In addition to the alertness of our engineering director through contact with technical societies and specification writers," he continued, "our association has a Manufacturers' Division which enables the manufacturer to keep abreast of our industry's production problems, and this cooperation between the manufacturer and producer through the medium of our association is good insurance in that a team exists to tackle any unusual problem."

Controls, as you know, the president said, are full of headaches in their operation, both for those in the government and those who operate under them. The suggestion of controls immediately raises questions, and the answers are not to be found in individual action but in group action. Our members know the value of our association in answering these questions, he noted, for group representation is essential to the agencies of government in expediting the formulation of regulations or in rendering decisions affecting an entire industry such as ours. "We must have the importance of our industry made clear to the authorities," he continued, "and at the same time assure them of our full measure of cooperation for the preservation of our country and the freedom it represents."

Mr. Snyder also acknowledged the value of the trade press to the N.S.G.A. Their association with us over the years has been both pleasant and beneficial, he said, and the study of problems by their roving reporters renders a valuable service to our industry.

In concluding, President Snyder stressed three points of great value to association members. First, he said, it is absolutely essential for members of our industry to work together, sharing in both the benefits and the costs. Second, he noted that there are many advantages to be had from close association with the manufacturers of the tools of the sand and gravel industry. Finally, he said, it is both necessary and practical to maintain a staff of recognized ability and integrity such as the competent one we have at present.

Ahearn's Report In his annual report, Vincent P. Ahearn, joint executive secretary, informed a meeting of both associations that the value of the combined output of the sand-and-gravel and ready-mixed concrete industries in 1950 ran some-

where between $650,000,000 and $700,000,000.

"We estimate," Mr. Ahearn said, "that ready-mixed concrete production in 1950 was at least 32,000,000 yards, valued at somewhere around $325,000,000 and consuming about 40,000,000 bbls. of cement." However, he noted, there are some who consider this estimate too low, and believe that 50,000,000 bbls. is closer to the actual consumption figure. "Using this higher figure," he continued, "ready-mixed concrete production last year totaled about 40,000,000 yards, valued at around $400,000,000."

Sand - and - gravel production in 1949, the last year for which official figures are available, amounted to 319,104,000 tons, valued at $248,443,000, he said. "We estimate, based on a preliminary study of production reports from members, that sand-and-gravel production increased about 10 percent in 1950." When the actual 1950 figures are available, he predicted, sand-and-gravel production in the 12-year period beginning with 1939 will go over the 3,000,000,000-ton figure, with a value of more than $2,000,000,000.

"Our industry has taken a big bite out of the crust of the earth in the past 12 years," Mr. Ahearn said. "These record-breaking productions and dollar values have brought in their wake a number of new problems which cannot be ignored and which have turned our thoughts and energies in the direction of cultivating good public relations. The public demand for elimination of the pollution of the navigable waters of the country has had its reaction in our business." Too, he added, the sand-and-gravel and ready-mixed concrete industries have encountered industrial zoning difficulties. "To survive as independent businesses, to avoid crippling and drastic restrictions and regulations, we must develop and maintain good relations with the governments and the people of the communities in which we do business. I know of no more important challenge to industry management," he declared, "and I know of no more important responsibility for our executives to assume."

L. W. Dunn, Fort Worth Sand & Gravel Co., Inc., Fort Worth, Tex., and E. G. Asche, Construction Materials Co., St. Louis, Mo.

Carl R. Olson and Robert S. Barneyback, both of the Henry J. Kaiser Co., Oakland, Calif.

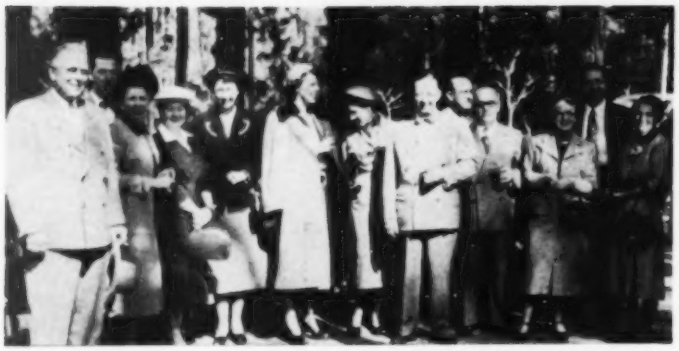
"All industry, and especially the sand-and-gravel and cement industries, suffered a transportation shortage in 1950," Mr. Ahearn stated. "The basic problem is insufficient railroad cars. The railroad wound up 1950 with 34,000 fewer cars than they had at the end of 1949, the number of cars retired from service being greater than the new cars installed. The railroads have 114,240 new cars on order, 3,869 of which are covered hoppers, and a combined total of about 49,000 gondola and hopper cars, the type principally used for sand and gravel." Mr. Ahearn said that no substantial relief from the acute railroad car shortage will come for two years. As for trucks, upon which the ready-mixed concrete industry depends, and by which approximately 60 percent of the annual commercial sand and gravel production moves to consumers, Mr. Ahearn said that "manufacturers of new trucks and repair parts for existing trucks will have to contend with an official policy of substantial allocations of steel production to *other* types of transportation". Referring to data from the U. S. Bureau of Mines, Mr. Ahearn noted that in 1949 only 31.7 percent of the commercial sand-and-gravel production moved by rail, while 59.6 percent moved by truck. And if the railroad's petition for a 6 percent freight rate increase is granted by the Interstate Commerce Commission, he added, the railroads will continue to lose ground and the trucks will continue to gain ground.

"Contrary to 1940 when we had an unemployment problem," he said, "we enter the new emergency in the presence of the greatest civilian boom the country has ever known, and as our armed forces grow and military production really gets started, civilian industry will have to compete in a short manpower market." Our two industries must depend for many years to come on employment of men 26 years of age

E. L. Clement, Lakeview Sand & Gravel Co., Fond du Lac, Wis., and Joseph Pfohl, Pfohl Brothers, Inc., Buffalo, N. Y.

Gene Mason, Concrete Materials Co., Waterloo, Ia., and C. R. Joelson, White Pigeon Sand & Gravel Co., White Pigeon, Mich.

J. Craig McLanahan, McLanahan & Stone Corp., Hollidaysburg, Pa., and Walter E. Trauffer, Pit and Quarry Publications, Chicago.



In this California group at the Jahncke estate outing are the J. D. Greggs, California Materials Co., Sun Valley; the Robert Mitchells and the O. W. Bests, Consolidated Rock Products Co., Los Angeles; the Robert Barneybacks, Henry J. Kaiser Co.; the Donald Meeks and Mrs. R. K. Humphries, Pacific Coast Aggregates, Inc., San Francisco; and the N. J. Redmonds, Blue Diamond Corp., Los Angeles.

and over, and on the employment, to the extent possible, of women and handicapped workers, for manpower pressures will mount as the year develops.

In the fields of priorities and allocations, Mr. Ahearn pointed out, there will be intense competition in the coming year for critical materials like steel, copper, and aluminum. "There will be drastic and persistent shortages, fundamental in character, which will not be relieved by any priority or allocation order which could possibly be written by the most sympathetic official."

"Taxation problems occupied a great deal of our time in 1950," Mr. Ahearn noted. "We were well on our way towards getting percentage depletion when the Korean conflict killed all chances of getting any provision in the Revenue Act of 1950 which curtailed federal income, no matter how inconsequential." Inasmuch as other members of the nonmetalic minerals family already have percentage depletion, our exclusion from the group is an unjustified discrimination. However, he added, we did successfully sponsor an amendment to the Excess Profits Tax Act of 1950 which authorizes computation of mineral properties, permitting the producer with more than one mining property to combine his mining properties for the purpose of computing excess output.

Noting that both the sand-and-gravel and the ready-mixed concrete industries are subject to price and wage controls, Mr. Ahearn speculated that there will be flexibility in wage controls and rigidity in price controls, but this policy should not cause members of the industry to fail to come forward with applications for price increases in justified situations. However, he added, many of our companies may find themselves under the compulsion to absorb some of the new taxes which Congress and the state legislatures are about to impose.

Turning to labor relations, Mr. Ahearn pointed out that pension agreements have not spread to the sand-and-gravel industry as they have to other industries. Concerning pension agreements with unions, he offered this word of caution: "Any proposal from a union should stand three tests: there should be no involvement of the regular rate of pay under the Wage and Hour Law, and therefore the administrator of that law should be asked to examine pension proposals before agreement is reached; there should be consultation with the Bureau of Internal Revenue in order to determine whether pension payments are deductible for corporate tax purposes; and there should be a careful scrutiny of pension proposals in the light of the mandate of the Taft-Hartley Act that, subject to specified exceptions, an employer is prohibited from paying *any* money to any union."

In concluding, Mr. Ahearn said that the National Sand and Gravel Association now has 187 active members and 71 associate members, and the National Ready Mixed Concrete Association has 442 active members and 62 associate members. Both associations have the largest number of active and associate members in their history, and each has a working surplus and is living within its income.

Walker's Report Research, publications, and other miscellaneous activities of the Engineering Division were discussed by Stanton Walker in his annual report. Our research laboratory, which is operated jointly by the two associations at the University of Maryland, deserves most prominent mention, Mr. Walker said. "We have been in our new quarters for more than 1½ years and substantially all of the planned new equipment has been installed and is in service. That is to say, we are fairly well 'shaken down'. I shall not describe our facilities at this time. That has been done in a highly satisfactory fashion by the trade press."*

Referring to the laboratory's tests of freezing and thawing, Mr. Walker said, "A major item of new equipment purchased in connection with our move to new quarters is our automatic machine for subjecting concrete to eight or more freezing-and-thawing cycles per day, which had just been put in service at the time of the last annual meeting. It has been working continuously and at substantially full capacity since that time." The new machine, he continued, has been modified to freeze in water or air. "To illustrate the applicability of the equipment let me mention one freezing-and-thawing investigation. It involves the effect of processing aggregates by heavy-media separation. Two gravels so processed have been studied. The results show significant improvement in one case but in the other so limited improvement as not to be encouraging."

"There has been much talk of the effects of the thermal properties of concrete, and its ingredients, on concrete durability," Mr. Walker told his audience. Preliminary work on this was done a couple of years ago, and more recently, the problem has been the subject of study in the N.S.G.A. laboratory by W. G. Mullen. A number of laboratories are actively working on this subject, and the results give promise of yielding considerable information of value.

Mr. Stanton also mentioned experiments on concrete proportioning. He revealed that some of the relationships used for calculating concrete proportions are derived from researches conducted more than 30 years ago. Changes in concrete technology have made it desirable that some of these be reexamined, and such a study has been the subject of a laboratory research conducted in cooperation with a committee of the American Concrete Institute.

As to laboratory work for the coming year, Mr. Walker said that some of the major items demanding attention are as follows: further studies of the freezing-and-thawing

*See Avery, William M.: *Equip New Lab for Consolidated Research*, PIT AND QUARRY, April, 1950, pages 62-66.

Left: Mr. and Mrs. Paul E. Wiese, C. S. Johnson Co., Columbus, O.

Right: C. W. Shirey, C. W. Shirey Co., Waterloo, Ia., and Robert F. Porter, Harry T. Campbell Sons' Corp., Towson, Md. Mr. Shirey served as president of the ready-mix association in 1946, and Mr. Porter served in the same capacity in 1949.

testing procedures with a view of assisting in the development of a much needed standard method applicable to acceptance testing; further studies of effect of various methods of beneficiating aggregates, with particular reference to concrete durability; an extension of the preliminary work done in studying the volume change characteristics of concrete and its ingredients—the thermal compatibility problem and questions allied to it; further studies of the alkali reactivity phenomenon; and test of additional admixtures with comprehensive tests of certain specific ones.

As a part of the Engineering Division's publication program, Mr. Walker mentioned two publications as having aroused special attention. Both of them deal with ready-mixed concrete. They are the *Recommended Practices for Sampling and Testing Ready Mixed Concrete* and the booklet *Your Job*. The first of these, he said, was prepared by the association's staff in cooperation with members of the industry and members of the American Council of Commercial Laboratories, and has been helpful as a warning of the highly important effects of careless practices on measurement of concrete quality. The second, he added, represents the completion of a project initiated in 1949 to prepare a driver's manual.

Joint Luncheon The speaker at the joint luncheon of the N.S.G.A. and N.R.N.C.A. on Tuesday was De Lesseps S. Morrison, the vigorous young mayor of New Orleans, who has made a national reputation for himself by cleaning out crime and otherwise improving that city. He described a municipal development program which is now in progress consisting of parks, playgrounds, slum clearance, housing, boulevards, grade crossing elimination, a new Union Station, etc. Private capital is going along with the program with considerable housing and industrial construction. Mayor Morrison said that building permits totaling $92,000,000 were issued in 1950, about eight times the total in recent years. The Union Station and affiliated programs alone eliminate 122 of the 144 railway grade crossings in New Orleans. A series of slides illustrated the variety and scope of the work being done which will make New Orleans a modern metropolis without, it is hoped, eliminating much of its historic charm.

Industrial Controls An open forum on industrial controls under the defense program held at a joint meeting of the two associations on Wednesday morning was presided over by A. L. Shiely (J. L. Shiely Co., St. Paul, Minn.) He declared that such controls are absolutely necessary if we are to succeed in our defense program, and, he said, the men at the top understand industry's problems and want free enterprise to succeed. Most of them are businessmen who will eliminate these controls as soon as it is possible to do so, and we owe it to them and to the country to cooperate in every way.

Regarding priority regulations, Vincent P. Ahearn, executive secretary, said that the sand-and-gravel industry comes under the Defense Minerals Administration with the rest of the mining industry. He said that the DO rating is extended to any manufacturer who makes equipment for the defense effort but that a separate order must still be obtained from NPA for MRO items. He cited a case where an operator needed to move his plant and a war order came along just in time to give him the necessary priority. As to car supply, the DO rating cannot be used to improve car supply directly but it gives one a better argument.

The full effects of control, said Mr. Ahearn won't be felt until late in 1951 and it will continue through 1952 as this country must form a stockpile of critical materials in one year instead of three, must equip an army of 3,500,000 men, and must supply arms and equipment to our allies. In discussing construction curtailment regulations, he said that proposed construction must be vital and that regional offices of the Department of Commerce must be seen before an application for a license is made. He said that the contractor is responsible for the decision on the

K. C. Schmidt, Illinois-Wisconsin Sand & Gravel Co., Chicago; Ralph C. Johnson, Simplicity Engineering Co., Durand, Mich.; and George P. Grant, Pit and Quarry Publications, Chicago.

importance of a project and that sand-and-gravel and ready-mix producers should assume they are complying unless they have knowledge to the contrary. Mr. Ahearn indicated that some clarification of the types of construction exempted is needed but that the types excluded are definitely out and licenses should not be requested for them. He pointed out that a request for enough steel to finish the New York State Throughway was turned down.

With respect to wage and price controls, Mr. Ahearn admitted that some adjustments are yet to be made but urged producers to keep adequate records for inspection at any time. He also pointed out that each plant sets its own price, even if several are operated by the same company. When a new product is added, the price is set by that of the nearest competitor.

Kenneth Tobin, of the N.S.G.A., spoke on deferment of essential personnel and answered questions on this subject. He said that reservists are now being carefully screened but that the only ones really safe are those with four or more children. Employers were advised to plan to replace reservists as soon as possible, as they will be gone by summer. The reservist can apply for deferment but even if granted it will only be for 6 months or a year. Both the sand-and-gravel and ready-mix industries are rated as essential, but few jobs in either are regarded as critical. Graduate engineers, machinists, mechanics, foremen, and tugboat captains are so regarded. Fathers, said Mr. Tobin, are temporarily safe from the draft.

Highway Programs "For at least 20 years our highway programs have been pitifully inadequate and, as the inevitable result, our national highway system today is in more urgent need of betterment than it has ever been." With these words, Robert J. Potts, member of the Texas Highway Commission, set the tone of a provocative speech on *The Urgency of Adequate Highway Programs.*

Talking informally and personally, Mr. Potts recalled how Uncle Sam timidly entered the road-building business 34 years ago after a six-year period of hot contestation and debate. The federal operations grew, as always, he continued, and were successful beyond expectation because of the compelling need. But, he added, the timidity continues acutely to this day.

"From a very modest beginning," said Mr. Potts, "support increased adequately for eight or ten years while we learned how to operate the plan. But motor vehicles were being turned out in constantly increasing number. Business and industry were keeping pace with motors. So the road shoe was badly pinching the traffic foot by 1930." Then during the great depression, Congress got appropriations out of the old rut, he said, but only as a relief measure so that the states could employ thousands of W.P.A. clients. "Subsequent years showed substantial reductions in appropriations after 1935 as the depression wore off," he continued, "even though traffic and highway needs increased at least as rapidly as did general business activity. To be sure, we received some much needed road improvements, but we also got our first large-scale demonstration of our utter lack of practical understanding and courageous action toward meeting urgent highway needs."

"Then came the demand for fast and dependable highway transportation of heavy loads while we fought the great war," Mr. Potts recalled, "and with it came also the general freeze on all construction, foolishly including highways." The official thinking of this period, he said, seems to have been "The roads are here. We will use them as needed until they wear out." He declared that although an accurate estimate would be impossible, our loss of investment in roads was stupendous.

Towards the end of the war, Mr. Potts pointed out, the American Association of State Highway Officials requested Congress to authorize a three-year post-war program of $1,000,000,000 per year to restore our battered highways and to relieve the expected post-war unemployment. "With that double plea, they got half of what they requested," he said. "Again, quite unrealistically, a great economic necessity had to be supported by a worthy social objective."

Mr. Potts enumerated the many appraisals, the constant concern, and the detailed requests that have been submitted to Congress in the intervening years, only to be halved, reduced, or (in the case of 1949 when some of the states were slow in matching their allotments) entirely omitted. Finally, the American Association of State Highway Officials reported to Congress in 1950 the following money needs for betterment and construction: (1) primary highways, rural, $14,200,000,000; (2) primary highways, urban, $7,700,000,000; and (3) secondary highways, $7,000,000,000—for a total of $28,900,000,000.

Their report, Mr. Potts said, contained this suggestion: "To overcome the existing needs on the federal-aid system over a period of 15 years will require an annual expenditure of $2,900,000,000, including allowances for stop-gap improvements and replacements that will continue to accrue throughout the program period." With the states matching, this would have involved a federal appropriation of $1,450,000,000. The final appropriation, Mr. Potts noted, was $500,000,000. "An interesting coincident to note just here," he pointed out, "is that the $1,450,000,000 federal money mentioned above happens to be comfortably less than the total the Federal Government took from road users last year in gasoline and other so-called excise taxes."

Referring to the increased use of our highways, Mr. Potts declared, "From 1940 to 1950 total vehicle miles of travel increased 60 percent to a total of 500,000,000 miles per day. That figure is just 'too big to take without a chaser.' So try it this way: That mileage would take you for 1,050 round-trips to the moon every day—and we used to say Jules Vernes was crazy!" Such illustrations as these, he noted, help us to realize that we have been merely playing with the problem of adequate highways to carry such a tremendous volume of traffic. It is clearly evident that we have for years been in urgent need of a more liberal program of highway improvements.

As to where we are to get the necessary money to meet these requirements, Mr. Potts admitted he did not know. But, he added, just as we cannot drink champagne on a beer income, neither can we operate $100,000,000,000 worth of vehicles over worn-out, obsolete roads, and weak bridges. Too, he said, even though some of the states may have been a little slow in matching federal funds, they have always done it, and there is no proof they would not continue to match-up, even if the ante were larger. "An annual appropriation from the Congress equal to what road users have contributed in federal excise taxes, if matched by the states, would have been approximately sufficient to have prevented our present deficiencies," Mr. Potts declared.

Specifications "The problem of writing a specification applicable to the many different conditions existing throughout the United States is a most formidable one," Director of Engineering Stanton Walker told

Mr. and Mrs. Robert J. Potts, Harlingen, Tex.

those attending the Tuesday afternoon session of the National Sand and Gravel Association. "If a specification were to elminate all aggregates except those unqualifiedly known to be good, available material would be so limited as to hamper construction very greatly and even to eliminate concrete construction in many categories in many localities. The economics of construction require that specifications provide for the use of less than the best. How much 'less than the best' may be permitted must be judged in the light of local conditions."

Most aggregate specifications place principal emphasis on four basic factors, Mr. Walker said. These are size and grading, hardness and strength, cleanness and freedom from impurities, and soundness and durability. "While this paper is not restricted to concrete aggregates," he said, "principal emphasis is placed on them."

"In the field of coarse aggregates," Mr. Walker noted, "there is little that is new that can be said about size and grading. The trend towards requiring materials with maximum sizes larger than about 1 in. to be furnished in two or more sizes has been so widely accepted that it hardly requires discussion." However, he added, "fine aggregate grading is less well standardized than coarse aggregate grading, and there is much less unanimity of opinion with respect to it. For concrete the trend is towards more rigid limitations on grading and uniformity of grading." One of the problems resulting from this trend, he said, is the familiar one of sizes wanted not being present in the deposit and the necessity of having to supply them from other deposits or by grinding and crushing.

"In a very general sense," the speaker pointed out, "particle shape may be considered as allied to the size and grading problem. Particle shape of coarse aggregate presents few problems that cannot be overcome by proportioning, he continued. "In certain bituminous mixtures, particularly the coarse graded and open types, and in railroad ballast, particle shape is of importance to stability and load-bearing capacity and, therefore, specifications related to it are justified."

Turning to hardness and strength, Mr. Walker said that they loom important mainly as they reflect other characteristics. In general, he added, aggregates that are not hard enough or strong enough reveal these deficiencies by lack of soundness or durability. "Hardness and strength of aggregates have relatively little effect on the compressive strength of concrete," he continued. "Their effects are more clearly revealed in flexural strength—a measure of principal importance in pavement slabs." As for testing hardness and strength, Mr. Walker named the Los Angeles Rattler, a combination of an abrasion and impact machine, as affording as reliable a measure as any available.

Mr. Walker indicated that the problem of impurities has many ramifications. It may involve only such materials as organic substances, silt and clay, readily removed by ordinary processing methods. Or it may involve soft, unsound, or chemically reactive particles, or impurities such as coal and lignite, not readily removed by ordinary processing methods. Passing over the usual limitations on organic impurities and silt and clay, Mr. Walker went on to the difficulties and uncertainties of sampling and identification. "These difficulties," he noted, "suggest the need for some sort of performance testing or for means of identification free of the personal equation. One approach which has been proposed to identifying the measuring the quantity of soft and unsound particles involves the assumption that such particles are lighter in weight than the satisfactory material. Such an assumption leads logically to the use of heavy liquids for measuring the quantities present." However, Mr. Walker added, "it is an unfortunate fact that all undesirable particles from the viewpoint of softness and soundness are not lighter in weight than the parent material. Some of the limonitic particles prevalent in glacial gravels are examples. Further, all lightweight particles are not deleterious."

"The approach of freezing-and-thawing tests in concrete as a measure of particles contributing to lack

C. S. Feller and John Curtin, both of the District Sand & Gravel Co., Silver Hill, Md.

of durability strikes me as offering most promise," Mr. Walker continued, adding that further standardization of procedures, or understanding of the effects of different procedures, is essential before freezing and thawing can find general application as an acceptance test.

"There appear to be three approaches to the determination of harmful quantities of reactive impurities in aggregates," he pointed out. "First, there is the approach of identifying them by examination of the aggregate by petrographic methods. If suspected material is present—opaline silica, chalcedony, chert with interstitial chalcedony, etc.,—then the material is classed as reactive, willy-nilly. Then there is the test in mortar to determine whether or not alkali reaction actually takes place. Such tests require meticulous control, and the time to produce positive results is from a minimum of six months up to a couple of years or thereabouts." Mr. Walker noted that aside from such questions as may exist as to the reliability of the indication ("and some have been expressed"), an obvious objection to this procedure is the time required.

"A third approach involves an effort to simulate the chemical reaction between the aggregate and the cement by a so-called 'quick chemical test' in which the aggregate is exposed to a sodium hydroxide solution," he continued. This involves determining the solubility of the aggregate in the solution, together with accompanying reduction in solution alkalinity. "While the test appears to be adequately reproducible so far as repeated tests of the same sample are concerned, there is question of its overall reproducibility for different samples in different laboratories," he observed.

The soundness and durability factor cannot be separated properly from discussions of impurities and of

hardness and strength insofar as these affect the durability of the finished product, Mr. Walker explained. Soundness and durability indicate the ability of aggregate to retain a uniform physical and chemical state over a long period of time so as not to cause disruption of the concrete, or other medium, in which it is incorporated, when exposed to weathering and other destructive actions. "Conventional specification limits on aggregates, related to durability of concrete, are based on either the sodium or magnesium sulphate test. That test," he warned, "is . . . not discriminating enough to separate with assurance materials which are unsound in concrete from those which are sound. About all that can be said is that aggregates having a very high loss should be regarded with suspicion; those with a low loss are generally, but not always, satisfactory."

"The subject of the effect of aggregates on the durability of concrete should not be left without some mention of the recent concern which has been expressed over the thermal characteristics of aggregates—its coefficient of expansion and its thermal diffusivity," Mr. Walker said in concluding. "It has been suggested that a large difference between the thermal coefficient of the coarse aggregate and the mortar may result in destructive stresses in the concrete with changes in temperature. It has also been suggested that a high thermal diffusivity represents an unfavorable condition. However, there is much conflicting data on this subject and more work will be needed before the significance and magnitude of effects of these characteristics can be evaluated."

Principles Of Crushing An excellent paper on principles of crushing, written by Fred C. Bond and Frank E. Briber, both of Allis-Chalmers Manufacturing Company, was read by Mr. Briber at one of the early sessions of the sand and gravel association. Briefly covered were such matters as the theory of crushing, energy input requirements, particle size distribution, crushability tests, particle shapes, general types of crushing equipment, and the characteristics and limitations of the various types of crushers.

Because it is virtually impossible to condense the information covered in the paper, PIT AND QUARRY has requested the authors' permission to reprint it in full. This request has been granted, and the complete paper will be published soon.

Sand Classification Frank Penepacker (Pacific Materials Company, Portland, Ore.) described the operation of a plant which permits of grading fine aggregate to substantially any sieve analysis desired, and of maintaining the grading within narrow limits. The separation is made with equipment manufactured by the Dorr Company, and the process consists of introducing minus ⅛-in. sand into the tank of a hydroseparator which allows enough settling area to separate the coarse particles from the dirty wash water accompanying the feed from the gravel screens. The wash water is collected in a launder around the tank and the coarse particles are discharged through the bottom into two 8-compartment sizers. Here clean water is introduced, providing a stream of rising water to maintain the solids in "teeter" under a hindered settling condition. The smallest or lightest particles overflow weirs which separate adjacent compartments, resulting in eight distinct separations.

Each compartment, Mr. Penepacker said, is provided with an automatic discharge. In practice the discharges of the eight compartments are grouped to obtain three sizes of material: ⅛-in. to 14-mesh, 14-mesh to 30-mesh, and 30-mesh to 150-mesh. The speaker's presentation was illustrated by means of an excellent moving picture, showing the entire operation of the subject plant, as well as details of the sand separation process.

Hydro Separation Using slides to illustrate his remarks, W. W. Roberts (Concrete Materials Company, Waterloo, Ia.) described an application of the Holloway Hydro Separator for the removal of lightweight shale and coal particles and other trash from gravel. The equipment, which functions essentially as a trash separator, consists of a shell, a cone with sides which slope at 45 degrees, and a hood. A rising current of water carries particles of low specific gravity upward and out of the separator, while the heavier, sound particles go down through it.

Taxation and Accounting At the joint open forum on taxation and cost accounting on Tuesday afternoon, John W. Murphy (Central Pre-Mix Concrete Company, Spokane, Wash.) presided, and with Vincent P. Ahearn, executive secretary, and Charles A. Horsky, legal counsel for the two associations, answered a barrage of questions on a list of vital subjects. The subject of higher taxes was quickly disposed of—they are definitely on the way up, and no end is in sight.

The transportation tax is also apparently here for a long stay and is important to both industries. Producers are advised to re-examine the status of all drivers not on the payroll and determine whether or not the company is required to pay the 3 percent tax. The penalty for nonpayment, regardless of intentions, is 6 percent and is retroactive.

Accelerated depreciation for new emergency facilities was next discussed. Members were warned that getting certified for this is such a long and laborious procedure that, up to the date of the meeting, no producer has yet succeeded. It was announced, however, that the association will be glad to furnish application forms to be filed with the Defense Minerals Administration.

The subject of renegotiation was also quickly disposed of. During World War II sand and gravel were excluded from renegotiation and later also ready-mixed concrete. The status of sand and gravel was reaffirmed in 1948. It was pointed out, however, that there may be another wartime Renegotiation Act and that these industries might have to apply again.

Percentage depletion is regarded as out of the picture temporarily but it is not a dead issue, and the sand and gravel industry is entitled to it. Producers are urged to continue working for it and to make sure that their congressmen are informed on the facts involved.

Regarding the Excess Profits Tax, Mr. Ahearn said that many producers do not realize its importance to them. A detailed letter on this subject has been mailed to members of both associations.

Employee Relations The open forum on employee relations and related federal statutes was held on Wednesday afternoon and was presided over by Norman J. Fredericks (Koenig Coal & Supply Co., Detroit, Mich.). He stated that group insurance is becoming more important to employer-employee relations and that the association is making it available to those companies that want it. Each company makes its own decision on how the insurance will be paid for. There was a 65 percent return on the questionnaire sent out, and most of those replying already had some type of plan. One company having

such a plan charges each employee $0.60 per month regardless of age, and this averages about one-third the total cost. The company thus pays an average of $1.20 per man although in the case of older employees the payment ranges up to $9.00 per month.

Vincent P. Ahearn, executive secretary, said that the quality of the industry's labor agreements is improving but that many companies still have bad agreements. In one case an agreement gives the company no right to discuss grievances directly with an employee. He urged that producers do everything possible to break down the wall some unions have built between them and their employees. He also stated that exclusive seniority means laying off the youngest (in terms of service) and rehiring the oldest employees. The tendency now is to give the older employee preference only when he at least equals a younger employee in ability, merit, and physical fitness.

Charles A. Horsky, legal counsel, said that provisions of the Wage and Hour law were redefined in 1950. The problem of how to compute overtime is still with us, he admitted, but most of the former shortcomings have been taken care of. The basic principles of the Taft-Hartley Act are now probably permanent law, although some minor changes may be made.

Testing Aggregates *The Testing of Concrete Aggregates* was the subject of a detailed and interesting paper presented at the Thursday morning session by Herbert K. Cook, chief of the Concrete Research Division of the Waterway Experiment Station, U. S. Corps of Engineers, Jackson, Miss.

In the sphere of aggregate testing, Mr. Cook reported that all aggregates used by the Corps of Engineering are tested for grading, gravity, absorption, and even more important, sufficiency to enable economic processing. Fine aggregates, he said, are tested for the presence of organic impurities and for their mortar-making and structural properties. Coarse aggregates are tested for abrasion loss in the Los Angeles machine, he continued, as well as for quantities of soft, thin, or elongated particles. "Both fine aggregates and coarse aggregates in sizes smaller than one inch are tested for soundness in magnesium sulphate."

If the aggregate is suspected of being reactive with the alkalies in cement, Mr. Cook said, the Waterway laboratory almost invariably makes the quick chemical test, mortar-bar tests, and a rather thorough petrographic examination. These tests determine the amount and degree of reactive and expansive materials, as well as the kind and distribution of materials throughout the sample. And since the major portion of the samples received at the Waterways Station comes from the Gulf Coastal Plain, specific gravity tests are very frequently made to determine the percentage of porous or "unsound" chert.

Turning to the other function of the Waterway Experiment Station, that of being a research laboratory for the Corps of Engineers, Mr. Cook hastened to point out that by "research" he did not mean a group of people in white coats peering down microscopes or heating test tubes and about every other day making some miraculous discovery that makes everybody live happily ever after. "We don't have any white coats," he said. "Our laborers occasionally wear white canvas aprons, but they don't stay white long, and I can't think of a single miraculous discovery we have ever made. Nevertheless, I feel that we have paid our own way and the money spent to keep us going has been a good investment."

One of the projects that the laboratory is working on, Mr. Cook explained, is an attempt to develop a satisfactory non-freezing weathering test which will permit better aggregate evaluation for use in climates where freezing and thawing do not occur. Mr. Cook explained another project by the Waterway Station as "the collection of all data obtained on aggregates by all of our division laboratories."

One of the principal reasons for the station's existence, Mr. Cook explained, is to find out ways of saving the government money. "One of the research programs which we have underway right now is to find out if we can use certain pozzolanic materials not only to save cement but also to inhibit alkali-aggregate reaction to the point where we can safely use locally available reactive aggregates. If this work is successful," he declared, "it will not only save the government considerable money but will also enable the producer to make some money on materials that he might not otherwise be able to furnish."

Stream Pollution The subject of stream pollution has been of growing interest to sand and gravel producers for some years, and those present at the Thursday morning meeting were treated to a first-hand report of a situation with which others may become confronted. A. H. Smith (A. H. Smith Sand and Gravel Company, Branchville, Md.) told of the developments which led to his having to install at considerable expense facilities to keep his plant from contaminating a stream. He had operated a plant at Branchville, Md., for 27 years and had never received a complaint until 1947, when the Maryland Water Pollution Control Commission was formed. He was charged with polluting this stream with silt from his plant and was served notice to correct this condition within 30 days. The fact that sewage was being discharged into the same stream at 28 different points was disregarded, and his company was singled out as the

The plant installed by A. H. Smith (A. H. Smith Sand and Gravel Co., Branchville, Md.) to make asphalt sand and to prevent stream pollution.

chief offender. Serious or not, it was impossible to correct this condition in the allotted time; so the matter went to court and the company was fined $50 and costs. The case was then appealed to the circuit court, which reversed the verdict. Civil action was next taken, and the same judge issued an injunction, doing so reluctantly, as it appeared this might put the company out of business.

Several plans for correcting this condition were studied. A series of settling ponds which would keep the silt content of the stream below the permissible maximum would have cost $50,000 to install. It would also give trouble during flood periods, and the disposal of the solids would always be a problem. It was finally decided to build an asphalt sand plant near the sand and gravel plant, and this was done at a cost of about $40,000. The wash water from the main plant now goes into a settling basin 20 ft. in diameter and 13 ft. deep, and the solids are pumped to the asphalt plant. At this plant the fine material is blended with sand from an outside source and is then washed over a screen and passed through two Woods 12-ft. classifiers to make the asphalt sand. The output of 15 tons daily of minus 50-mesh sand is sold at a figure which will help write off the cost of this installation. In closing, Mr. Smith urged all sand and gravel producers operating a dredge in or discharging material into a stream to watch developments carefully in their areas.

The Ladies, Too, Set Record At New Orleans Conventions

By MRS. JAMES E. MONTGOMERY

FOR the ladies, the New Orleans conventions of National Sand and Gravel Association and the National Ready-Mixed Concrete Association February 12-15, 1951, were an outstanding success. Never before had so many women attended a convention of the two associations, and never before had such interesting events been planned in their honor. All records were broken! In the great registration room of the Roosevelt Hotel the feminine contingent became a parade. As one of the registrars said to this reporter on the second day of the convention, "There are almost as many ladies here as producers—418 ladies and 442 producers!"

Why this unprecedented attendance? It may be that the call of the South attracted women from those states which had been in the grip of an unusually severe winter. But from below the Mason and Dixon Line came more than a hundred ladies; from sunny California, twenty-five; and there was one from far-off Hawaii. Perhaps the women of the two industries are becoming more convention-minded. Perhaps happy memories of previous conventions brought them flocking back—this year with fresh recruits. So it should be.

It might have been, too, that the lure of the Creole City drew many—the charm and color of the Vieux Carre; the fame of the culinary triumphs in the old French Quarter; a desire to see the palatial ante-bellum homes of the Garden Tours; a yen to learn history without effort, even with pure delight, in this most historical of American cities. If our women attended the New Orleans conventions with any of these ideas in mind, their expectations were richly fulfilled.

Two events of major importance were planned especially in their honor and executed with signal success. On Monday, February 12, a luncheon was given in the Patio Royal, followed by a tour of the French Quarter; and on Tuesday, February 13, there was a walking-tour of the ante-bellum homes of the Garden District, followed by tea at the famous McGehee School. These entertaining events for the ladies were planned and carried out by Vincent P. Ahearn, Washington, D. C., executive secretary of the two associations, with the fine cooperation of the New Orleans Chamber of Commerce and the able assistance of Mr. and Mrs. Herbert C. Jahncke of New Orleans.

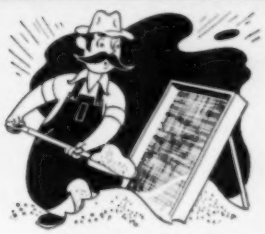
Sunshine and a rising thermometer conspired to add to the enjoyment of these entertainment features. A lovely spring day made possible the use of the outdoor courtyard of the old French home, the Patio Royal, where luncheon was served on Monday. Through the long enclosed entrance (once the driveway of this historic home) streamed more than 300 women of the convention, to be welcomed just within the patio by a gracious reception committee—each hostess wearing a corsage of orchids. The following ladies were in the receiving line: Mrs. Harris N. Snyder, Buffalo, N. Y.; Mrs. Albert R. Shiely, St. Paul, Minn.; Mrs. John W. Murphy, Spokane, Wash.; Mrs. William Moore, Boston, Mass.; Mrs. Norman T. Fredericks, Detroit, Mich.; Mrs. R. K. Humphries, San Francisco, Calif., and Mrs. Herbert C. Jahncke, New Orleans.

At flower-decked tables in this charming patio, which was bordered with tropical shrubbery, the ladies of the convention enjoyed a luncheon prepared in the finest traditions of Creole cookery. As a place souvenir each guest received a dainty package, wrapped in gold paper, containing a bottle of the Magnolia perfume for which New Orleans is famous. After luncheon the party was divided into groups of 25, each group under a competent guide, and thus began an unforgettable tour of the Old French Quarter. These guides are women of New Orleans families who know and love their Vieux Carre and are able to catch the color and charm of the Old Creole City.

Under their guidance the little groups walked up and down those narrow streets with overhanging balconies of iron lace work—Royal, Bourbon, Iberville, Bienville, St. Peter, Chartres—streets famous throughout the world. On corners they paused to learn the distinguishing characteristics of French and Spanish architecture, to note the myriad-shaped roofs and balconies, to hear the fascinating history of this Old Square, founded by Bienville in 1718. They visited charming patios, shaded by drooping banana trees and palms; they darted in and out of perfume bars and praline shops; and ended, breathless, at Jackson Square, there to view those historic buildings grouped around St. Louis Cathedral in beautiful harmony of

(*Continued on page* 92)

Screenings



by William M. Avery

WE READ just the other day a sad commentary on the plight of our vaunted American educational system. A survey was made in ten large cities to determine how many people were familiar with the Gettysburg Address, and where, by whom, approximately when, and under what circumstances it was delivered. The findings indicate that more than 7,000,000 adult inheritors of "this government of the people, by the people, for the people" have never even heard of the Gettysburg Address, and 16 percent of those for

whom it stirred some chord of memory were unable to identify the speaker. Fifty-four percent of the people queried were mistaken about the occasion, and guesses concerning the date covered the amazing span of 185 years.

This shocking unawareness of one of the richest documents in our national heritage is even more disturbing when considered in the light of the kind of knowledge that appears to have replaced it. We recall that several years ago the *Ladies Home Journal* ran a photo recognition test in which Dick Tracy, who was correctly identified by 97 percent of the victims, emerged as our new national hero. Perhaps the only way we can now hope to rescue the Gettysburg Address from limbo is to prevail upon Mr. Tracy to interrupt his fascinating activities long enough to recite its noble phrases each February 12th. If Orphan Annie, Joe Palooka, Moon Mullins, Li'l Abner and a few others would add *their* voices, they might eventually bring Honest Abe back to the people he loved so well.

Logic

A NEWS clipping from Belleville, Ill., states that the world's largest grower and packer of mushrooms has taken a five-year lease on 31 acres of mine workings of the Columbia Quarry Company at Valmeyer. "There is a possibility," the item goes on to say, "of mushroom growing developing into a large business in Valmeyer if conditions are favorable."

We generally like to see a bit of restraint and caution in reporting developments of this sort, but it strikes us that they overdid it a little in this instance. It should be in the nature of things for a mushroom growing enterprise to mushroom.

Countin' Chickens, Joe?

ABOUT a decade ago a chap named Hitler shelled out about $8,000,000 for some 18,500 tons of red Swedish granite which he intended to use for a victory monument to himself. His plans got fouled up somewhere along the line, and the material never left Sweden.

We understand now that the same quarried material has just been sold at an undisclosed price, and for a still-to-be-revealed purpose, to Joe Stalin & Co. It is to be hoped that at some time in his checkered career Joe may have noted history's tedious habit of repetition.

Anyhow, He's a Producer!

ONE of the affluent Chicago police captains who recently testified before the Kefauver crime committee disclosed that among other odds and ends of property he has acquired on his $5,000 a year salary is a 750-acre ranch in Arizona. Questioned later by newspaper reporters, he stated that the ranch consisted of nothing but sand and gravel. We assume this is a somewhat left-handed admission that it ain't hay, which it surely ain't. On the other hand, however, we feel dismally sure that an alert citizen can probably make a lot more money out of a police captaincy in Chicago than he could ever hope to acquire operating a sand-and-gravel plant in Arizona.

Punchcrete

SOME while back we vowed not to use any more items involving weird or improbable uses for concrete mixers. We believed, in any case, that the possibilities had been exhausted, along with the patience of our six faithful readers. The ban

is being relaxed just long enough to advise you that a machinery firm in Washington, D. C., has succeeded in employing a concrete mixer for mixing and serving several hundred gallons of punch to some 3,000 guests. 'Tis a trivial matter, but how does a fellow say "when" to a concrete mixer?

Explanation

HAVING tried with indifferent success on a number of occasions to explain to laymen how portland cement is made, we were delighted the other day to receive a press clipping from the Dallas *News* in which the problem is hurdled with two short, crisp sentences. We quote verbatim:

"A kiln is where the raw mix of limestone and shale is burned into the dark gary clinker. Gypsum is added after it cools, and the result is portland cement."

We have only one small question. Is that Gary, *Indiana*, clinker, or just plain old gary clinker?

Aerial view of the new Halliburton cement plant at Corpus Christi, Texas., which has an annual capacity of 1,500,000 barrels.

Four Dual-Fuel Engines Power New Halliburton Cement Plant

FOUR dual-fuel engines are meeting a difficult double challenge in the big new plant of the Halliburton Portland Cement Company at Corpus Christi, Tex. First, there is the economic challenge: a big modern utility steam plant is located just a few yards away, and engine operating costs must compare favorably with the cost of purchased power. Second, there is the operating challenge: the big ball grinding mills and other processing equipment are always a taxing load and sometimes a staggering load for the power plant.

Rounding out their first year of service, the engines have met both these challenges with unqualified success. Vice-president Ellroy King reports that it has been profitable to operate dual-fuel engines. Moreover, the plant has not experienced a single shut-down due to engine failure.

All four engines are two-cycle, Model 33FD16 Fairbanks-Morse dual-fuels of 16-in. bore and 20-in. stroke, developing rated horsepower at 300 r.p.m. Two of the prime movers are 10-cylinder units rated at 2,000 hp. and two are 8-cylinder engines rated at 1,600 hp. The larger engines drive 1,400-kw., 4160-volt Fairbanks-Morse alternators; the smaller engines turn 1,125-kw. F-M alternators. These operate at 3-phase, 60 cycle, 0.8 pf., 4160 volt.

The multi-million-dollar Halliburton mill has a capacity of 1,500,000 bbls. of portland cement a year and incorporates many unique design features. Although not the first plant to make cement from oyster shells, Halliburton is the first firm to grind oyster shell in closed circuit with rake and bowl-type classifiers. All raw materials—shell, clay, and bauxite, and iron ore—are ground separately and stored as slurry in individual tanks to permit maximum flexibility in blending the product. Another unusual feature is the provision of duplicate equipment which not only insures continuity of production, but makes it possible to operate two complete circuits independently. Thus, the plant can run at half capacity or produce two different cements simultaneously.

Cement manufacture requires heavy, power-consuming equipment. The two primary grinders are 8 by 16-ft. Allis-Chalmers ball mills driven by 450-hp. Electric Machinery synchronous motors. A secondary mill for shell grinding takes another 450-hp. motor. G.E. 100-hp. motors turn the two 377-ft. kilns, and each kiln has two induced draft fans driven by 100-hp. motors. Clinker is ground into cement in two 7 by 40-ft. Allis-Chalmers 3-compartment ball mills driven by 700-hp. Electric Machinery synchronous motors. Cement is pumped to storage by two pumps driven by 150-hp. E.M. motors, and the pumps are served by two rotary compressors driven by 200-hp. motors. This obviously is but a fragmentary list of equipment. In all, it takes 5,600 hp. to operate the plant at capacity, a load which can be carried by three engines with one 1,600-hp. unit in reserve.

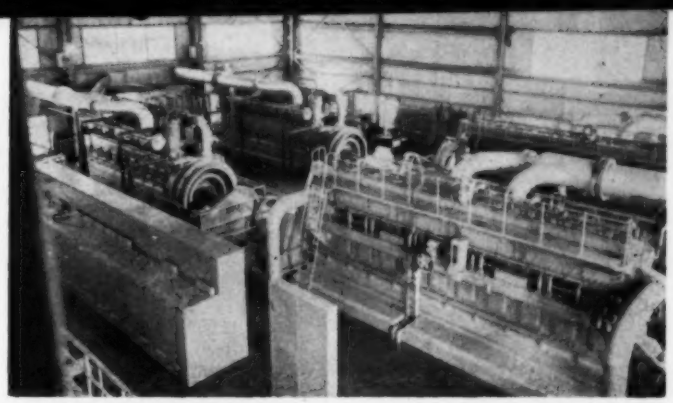
It is the practice in this plant to run engines at full load. Units in operation must run at an overload before the operator starts up another engine. Even the 5,600-hp. requirement, however, is not the full story on power demand. Pieces of heavy machinery stop and start, and the starts take lots of power. For example, the mills that grind clinker into cement each hold about 6,500 lbs. of 3½-in. balls, 14,600 lbs. of 3-in. balls and 14,000 lbs. of 2-in. balls in the first compartment; 44,500 lbs. of 1¼-in. balls in the second compartment; and 61,800 lbs. of ⅞-in. Concavex media in the third compartment. There are no clutches, and the 700-hp. electric motor is started across the line, pulling an estimated 500 percent overload. Works manager A. J. Anderson reports that the big mill is usu-

ally started when the engines in operation are already fully loaded, yet they take the sudden surge of demand in stride.

This was one of the factors which influenced Halliburton to put in its own power plant, since the power company took a dim view of starting the big motors across the line. Economy was another big factor. Demand charges for purchased power were bound to be high. Initially, it would be necessary to construct a big sub-station. Finally, natural gas is cheap in Texas, and dual-fuel engines promised to generate power at competitive costs.

The four-engine plant first went into service in December, 1949, and reached full production in 1950, producing at the rate of 25,000,000 kw.-h. a year. In the six-month period from July through December, 1950, the plant generated 12,775,700 kw.-h. while consuming 139,977 M.C.F. of natural gas and 94,227 gals. of fuel oil. This represents an average consumption of 10.96 cu. ft. of gas per kw.-h. Pilot fuel supplied 7 percent of the B.t.u.'s. The four units ran a combined total of 13,816 hours out of a possible 17,520. During this time, lubricating oil consumption totaled 5,422 gals., an average of 4,601 hp.-h. per gal.

The engines can operate either as full diesels or on natural gas with oil as pilot fuel, and can be switched instantly from one fuel to the other. There have been several occasions when the gas supply failed and the engines automatically switch to fuel oil while running at full load. Gas reaches the plant at 50- to 60-lb. pressure, is regulated to 56-lb. by an orifice fitting, is metered, and then reduced to 17-lb. in individual regulators for each engine. Fuel oil flows by gravity from storage to four 600-gal. day tanks. Picked up by engine-driven supply pumps, the fuel is pumped through duplex filters to the special small-capacity injection pumps that handle the pilot oil. Gulf Security E straight mineral oil is used to lubricate the engines and cool the pistons. Oil is circulated under pressure by built-in engine-driven pumps to the bearings and pistons and through a shell-and-tube oil cooler. Part of the oil is drawn from the crankcase continuously and put through a Honan-Crane Fuller's earth purifier for each engine. Upper cylinders are supplied with lube by force-feed mechanical lubricators which are filled automatically from the crankcase oil supply. Each engine has a motor-driven auxiliary lube pump for use in starting and shutting down.



Power for the Halliburton plant is supplied by these four dual fuel engines. The units at the left are rated at 1,600 hp. and the engines at the right at 2,000 hp.

Each engine has a separate closed cooling water system with an F-M motor-driven centrifugal pump circulating soft water through the engine jackets and a shell-and-tube heat exchanger. Jacket makeup water is treated in a zeolite softener. Nueces Bay, which adjoins the plant, provides an abundant supply of salt water for the raw circuit. The salt water is taken from the bay by three vertical turbine pumps, put through the exchangers and discharged to the bay. Jacket temperature is regulated by automatic thermostatic controls which bypass soft water around the exchangers.

The 1,600-hp. units have built-in scavenging pumps. The 2,000-hp. engines are supplied with scavenging air by motor-driven rotary positive blowers. Air for each engine is drawn from outside the building through 16-element Air-Maze impingement-type filters in metal air houses. Exhaust gases vent through vertical silencers. Starting air is provided by a pair of Gardner-Denver vertical motor-driven compressors which keep four bottles at 250 p.s.i.

The power plant's main switchboard is of the all-enclosed, dead-front, unit type with electrically-operated switchgear and particularly complete instrumentation. There is also a gauge panel beside each engine with an exhaust pyrometer, day tank level meter, gauges and alarms on lube and water pressure, and switches for engine auxiliaries.

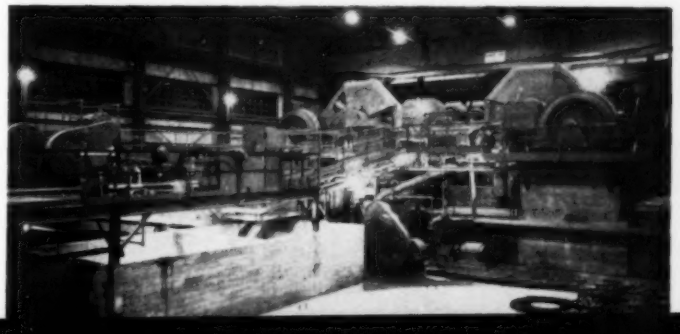
One piece of equipment which already has earned many times its price is a 6-cylinder Model 48AG4¼ Fairbanks-Morse diesel which turns an Electric Machinery synchronous generator at 1200 r.p.m. to develop 30 kw. The most crucial piece of production machinery in the mill is the thickener on which the entire plant depends. The thickener must run constantly and, if power failure caused it to stop, the mill might be shut down for a prolonged period.

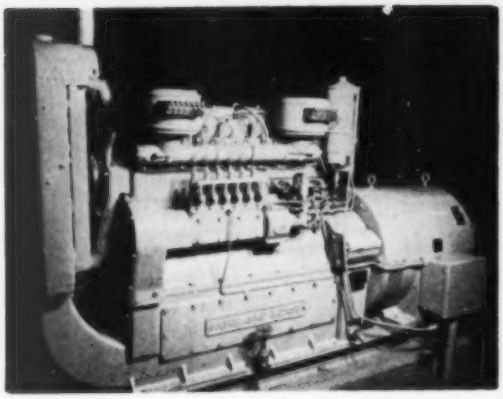
To insure an unfailing power supply, plant designers provided three alternate sources: a special line to the nearby utility plant, the mill's own four-engine power plant, and finally the little diesel-generator set. If one source fails, an automatic device switches the thickener motor to the next source, and then, if necessary, to the third. On one occasion lightning knocked out the transformers of both the utility and the big dual-fuels, and it was the 30-kw. generator that kept the thickener going.

This standby service is most important, but the little diesel has other functions. It provides enough power to light the entire mill and operate starting air compressors and other engine auxiliaries when all the big engines are shut down.

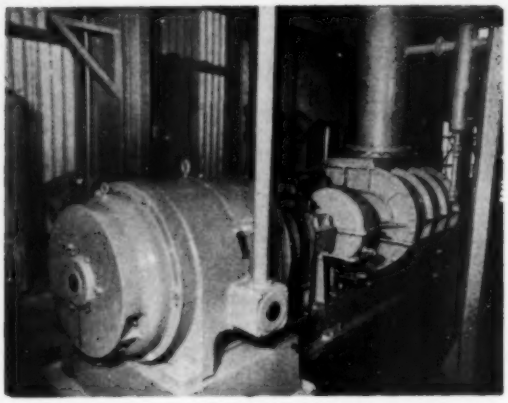
There is evidence throughout the mill of Halliburton's determination to manufacture a fine product with maximum efficiency. In the power plant this is evidenced by the heavy-

The four engines, driving alternators with V-belt driven exciters, produce power at the rate of 25,000,000 kw.-h. a year.





This diesel generator set provides power for lighting, engine auxiliaries, and emergency power for the thickener.



Scavenging air for each of the 2,000-hp. dual fuel engines is supplied by one of these motor-driven blowers.

duty prime movers and their full complement of protective accessory equipment. It is an extremely attractive plant, and its appearance reflects the pride of management and operating personnel. The engines are painted gray-green, foundations gray, and floors Spanish tile red. All piping and equipment are painted in accordance with a color code which not only enhances the appearance of the plant but facilitates quick identification and correction of trouble.

A preventive maintenance program is designed to keep the engines in peak condition. In the first year, no repairs were necessary.

Management of the Halliburton Portland Cement Co. is energetic, progressive, and thoroughly experienced. Erle P. Halliburton is president; Ellroy King, vice-president, secretary, and treasurer; Erle P. Halliburton Jr., vice-president; A. J. Anderson, works manager; Keith Sandefer, chief engineer; H. R. Gingerich, chief chemist; and Marshall Clements, sales manager. Power plant superintendent is Herbert Bolt.

The Ladies' Program

(*From page* 88)

design, the Presbytere, the Cabildo, the Pontalba Apartments. Between the Presbytere and the Cabildo, the beautiful old Cathedral, the heart of the great city, is set like a gem.

On the next day, Tuesday, February 13, a rising thermometer was auspicious for a walking-tour of the oldest "American" quarters of New Orleans, called the Garden District, and the ladies of the convention set forth happily on their second pilgrimage. Buses left the Roosevelt Hotel for the McGehee School, where the large convention party was broken up into smaller groups for purposes of sight-seeing. A number of charming women, residents of the Garden District, acted as hostess-guides through five beautiful homes. Here the Old South comes back to life. Surrounded by live-oak trees, magnolias, and towering palms, these homes are maintained by the present owners so as to preserve every detail of ante-bellum splendor. The wide porches, high ceilings, costly chandeliers, marble mantels, and priceless furnishings were of special interest to the ladies of the convention. The homes were visited in the following order:

The Fred N. Ogden home, 1331 Third Street, built in 1838 for Gaston Musson by one of the outstanding architects of the time. Of special interest are the bronze chandeliers, the cornices, the marble mantels, and the furnishings of English design.

The Frank G. Strachan home, 1134 First Street, built in about 1848 in the Greek Revival style of architecture with beams of cypress, floors of hard pine, windows and doors of mahogany. The mirrors were made to order in Paris. The house is of special historical interest because Jefferson Davis, only President of the Confederacy, died here in 1889.

The John M. Wisdom home, 1239 First Street, built in about 1840 of Greek Revival architecture. Of special note is the rose-patterned iron work of front galleries and side porches, and the mirrors of carved rosewood in the great double parlors.

George G. Westfeldt Jr. home, 2340 Prytania Street, the oldest house in the Garden District. The original part of the house was built in 1820 by a plantation owner, Thomas Toby of Philadelphia, for his overseer. Later owners added rooms, but no charm was lost in the additions.

Louise S. McGehee School, 2343 Prytania Street, now a private school for girls. This mansion, built in 1870, is a magnificent example of the free Renaissance style.

At the conclusion of the tour, tea was served at the school, and charming teen-age pupils showed the guests through this historic home, which now lends itself graciously to classrooms and a dormitory, even the old stables having been converted into a gymnasium for bobby-soxers.

The women of the convention found buses available for the return trip to the Roosevelt.

On Wednesday evening, February 14, the entertainment feature for both men and women was a boat ride on the Steamer *President* around New Orleans Harbor. The boat left the dock at 8:30 p.m. and returned at 11:30 p.m. Light refreshments were available. There was an excellent program and an orchestra for dancing. Thus closed the scheduled entertainment.

Ladies, we know you had a good time. Prove it by coming to the conventions of the two associations in 1952.

At Kenvil, N. J., a fire recently caused a $30,000 loss to the Sequine-Bogert Company, Inc. A 70-ft. cement hopper was destroyed in the blaze.

Pacific Coast Aggregates, Inc., reports a sales revenue of $15,636,107 and a net profit of $732,908 or 91 cents a common share for the year ending December 31, 1950. For the preceding year, sales totaled $13,373,216 and net profit was $397,793 or 45 cents a common share.

How to Get the Most Service From Conveyor Belts

By J. R. THOMPSON
Manager, Conveyor and Elevator Belt Sales, The B. F. Goodrich Company

another P-Q exclusive

YOU don't get your money's worth from a conveyor belt unless you make sure it receives the careful maintenance which alone will give you the most for your money. Here is an example—not an extreme one—of how such care pays off.

A belt costing around $3,000 is placed on a conveyor and operated without adequate attention and care. After carrying 7,000,000 tons of material, it fails suddenly. Another belt, identical in cost and the work it does, is inspected regularly. All damaged places on it are repaired as soon as found. Minor equipment alterations are made to assure straight running and minimum wear. As a result this second belt carries 35,000,000 tons—*five times* as much as the first one—before it has to be replaced.

Proper maintenance and some minor equipment changes have enabled a $3,000 belt to handle 35,000,000 tons instead of 7,000,000, at a saving of $12,000 in belting alone.

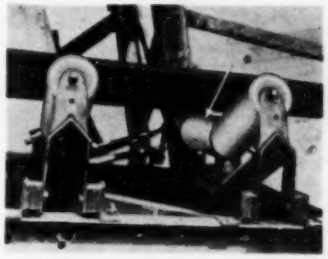
Probably no improvement in conveyor belt practice has done more to save maintenance time and expense than perfection of the field-vulcanized splice available in most parts of the United States through distributors of industrial rubber products. Most large installations are now vulcanized throughout and many large users have their own trained men and vulcanizers.

Straight Running Belts

Probably the most baffling problem that may confront the user of a belt conveyor is to determine the cause of a crooked-running belt and then find a remedy. Time and effort spent in solving such problems have real dollar value because a large percentage of premature belt failures are traceable to eccentric running.

If that part of the belt which tends to run off idlers is in the vicinity of the splice, the belt ends probably were not cut squarely when the splice was made. This is the most common cause of a crooked belt. Belt edges are not always perfectly true.

The safest plan, particularly when working with wide belts, is to draw a center line extending back



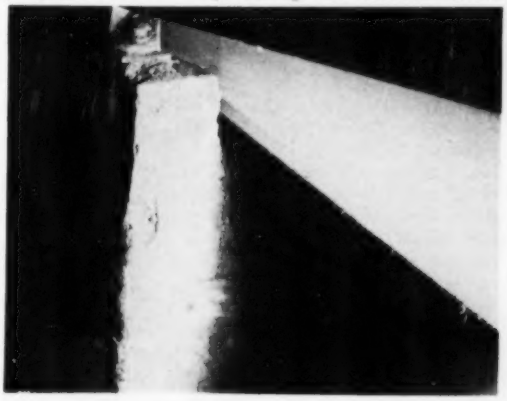
• This belt will probably run crooked. It is not making contact with the middle idler rolls, a condition which makes it "track".

at least 10 or 15 feet from each belt end. The ends then should be cut at right angles to the center lines, rather than to the edges.

Sometimes a belt becomes crooked because one edge has been worn off. If operated under high tension, the worn edge may stretch more than the rest of the belt. Under very moist conditions, exposed fabric along a worn edge may shrink as a result of moisture absorption.

Do not attempt to straighten a belt by unequal adjustment of the take-up screws. The end pulley should be set in alignment and kept that way. It is also a mistake to make a belt run straight by increasing the tension excessively.

Horizontal middle rolls of idlers must make contact with the belt in order to keep it in line. For this reason stiff belts which have too many plies in proportion to their widths sometimes run crooked. A belt operating with a load too light to press it properly against middle rolls of the carrier may not run straight. The remedy is to increase the delivery or reduce the speed of the belt to permit a heavier load.



• Improper alignment forces this conveyor belt to rub against a concrete abutment. The rubber is completely worn from the edge. Moisture can penetrate the fabric reinforcement and cause eventual belt breakdown.

If a conveyor belt persists in climbing sidewise on the same idlers, the fault is not with the belt but with the alignment of idlers or pulleys. When lining up idlers, work in direction of belt travel. Usually the carrying idler causing the trouble is the second or third one in the direction of the tail pulley from the point at which the belt climbs out of line.

Adjust belt idlers when the belt is carrying no load. Align at right angles to the center line of the belt. Some operators have found that it pays to lay out the center line with a transit. The correct location of each idler unit should be marked on the frames permanently so that if an idler is removed for repairs, it can be returned to its proper position.

Sometimes an idler becomes loose and slides to one end of its shaft, permitting the belt to fall against the shaft and be guided sidewise.

Occasionally an idler sticks on its shaft and cannot rotate. This tends to deflect the belt and also to wear away the idler and expose sharp edges that may cause belt damage. Periodic inspection and lubrication will prevent this trouble.

Bad alignment of conveyor supports may result when a conveyor is erected on a temporary or insecure foundation.

Inspection of numerous conveyor installations has indicated a frequent need for some method of maintaining alignment in the return strand of a belt. Such inspections have revealed also that many causes of edge damage are needless. Beams

• Deflection bars break the fall of heavy material in this installation. The fines drop through first, furnishing a cushion for larger pieces which follow. The arrangement keeps big lumps from crashing down the loading chute on the belt.

and other supports, nails, and sharp edges of metal and concrete too close to the belt are potential hazards. The effects of a rubbing belt are often seen on steel beams whetted to razor edges, two-by-fours sawed nearly in two, and concrete deeply grooved. Proper guidance of the belt and the elimination of hazards often will save considerable money.

Misalignment and edge wear of a belt can be caused by trippers which are not properly adjusted. At a tripper there is usually less clearance between the belt and the framework than along the open belt, so that only a slight misalignment may cause the belt edges to rub. Frequent inspection of trippers should be a rule for every operator.

Build-up of material on a snub pulley or a return idler may cause the belt to run off as it approaches the tail pulley, until the edge folds or creases. As a result transverse edge breaks will occur at somewhat uniform intervals, depending on tail pulley diameter and elongation characteristics of the belt carcass.

If a belt runs true when empty but tries to climb off the idlers when carrying a load, the trouble invariably is found to be unequal loading. The more heavily loaded side of the belt naturally seeks the middle of the carrier, causing the other edge of the belt to climb. Usually unequal loading is caused by delivery of material from a chute which is not in line with the direction of belt travel. The obvious treatment is to change the chute setup.

Belt alignment is also affected by changes in lump weight and size, in ratio between lumps and finer material, and in moisture content (and therefore weight) of the different portions of the load. When such conditions exist and a properly designed chute does not prove a total remedy, try self-aligning idlers.

A belt can be forced out of line by wind blowing against it. Erecting wind baffles or improving existing belt housing may be the cure. Another remedy is to use self-aligning idlers.

Excessive Tension

A belt operating under excessive tension is doubly susceptible to damage and wear. Tension not only strains the drive mechanism but also puts an unnatural stress on the belt, which tends to weaken the splices and enlarge any cuts or breaks the belt may have suffered. Excessive tension can reduce the troughing action of a belt and lessen its contact with the center idlers.

The belt is guided by its center idlers. Any reduction of friction or pressure between them and the belt tends to reduce the training action. Increasing the tension can result in other damage such as overheated bearings, pulley shaft failure caused by crystallization, and breakage of metal fasteners in belts not spliced by vulcanization.

Among the causes of high tension are the following: Loading a belt beyond the weight or size of the load originally calculated when the belt was installed; increase of frictional resistance because of improper maintenance of idlers; excessive tightening of the belt through take-up screws or by oversize take-up counter-weights; belt shrinkage as the result of moisture absorption by the fabric or cord reinforcement; excessive crown of tail and head pulleys.

Remedies for excessive tension may be found among the following procedures:

(1) Reducing the load.

(2) Establishing the central loading of the belt so that there is an even feeding of material to the carrying surface.

(3) Removing various conditions that increase resistance, such as poorly lubricated idlers, worn idlers, and obstruction of idlers by spilled material.

(4) Reducing take-up. Apply only the amount of take-up necessary to operate the drive without slippage and to keep the sag between idlers to a minimum. A long-centered conveyor should be equipped with automatic, gravity-type take-up to permit the belt to adjust itself automatically to changes of belt length resulting from changes in the amount of load or from stretch or shrinkage caused by moisture.

(5) Increasing the belt wrap. In some cases the need for excessive belt tension can be lessened by increasing the wrap of the belt around the drive pulley. This is done by means of a snub pulley or a tandem or dual motor drive.

Pulley Lagging

By covering the drive pulley face with rubber, several advantages can be achieved:

(1) Lagging increases the coefficient of friction between the belt and the pulley, permitting lower initial belt tension. Under dry conditions this increase in coefficient may be 20 to 50 percent.

(2) Slippage under wet operating conditions can be reduced or overcome by grooving the lagging. Grooving helps prevent inclined conveyors from running away when wet and gives longer service life.

(3) Lagging prevents abrasive friction between the belt and the pulley face and thus prolongs pulley life.

(4) Lagging which is thick and soft, when used on pulleys which the dirty side of belt touches, reduces the tendency of the material to build up on pulleys. Such lagging should be 3/8 to 1/2 in. thick, and is more effective if grooved.

(5) On tandem drive pulleys, grooved lagging lessens slip and creep between two driving pulleys.

Belt Wear at Loading Points

Wear on a conveyor belt occurs principally at loading points. The factors involved include the direction of feed relative to the belt movement, the speed of the belt and material carried, and the impact of lumps on the belt.

The loading chute should be located so that material leaves it while moving in the same direction as the belt. Frequently in order to guide material properly a chute is curved. Sometimes an adjustable, curved guide can be installed between two conveyor sections or between a feeder belt and the main belt to deflect load particles so that they strike the lower belt surface at more nearly a grazing angle.

If the load is fed to the belt at an angle to the direction of belt travel, not only is abrasive wear on the rubber increased, but the lateral force imparted by the material being loaded may also cause the belt to climb the idlers, resulting in damage to the belt edge.

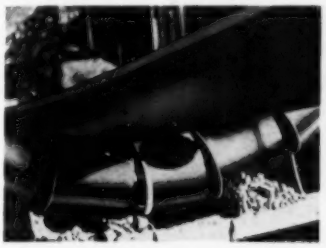
When a slow-moving load strikes a relatively fast-moving belt, the condition is much like that of a man boarding a speeding train by jumping onto it from a bridge. A slipping action between the load and the belt occurs at the instant of impact, causing abrasive wear on the rubber. Therefore it is desirable to have loaded material travel at belt speed as it leaves the chute.

Sometimes cover wear, which is caused only by that portion of the load that touches the belt, can be reduced appreciably by regulating belt speed. A certain tonnage per hour can be delivered either by a partly-loaded belt operating at high speed or by a fully-loaded belt running at a lower speed. At higher speeds, a larger percentage of thinly-spread load touches the belt, and abrasive wear is greater in this case than when the same quantity is carried on a fully-loaded belt at slower speed.

Lower belt speed plus fuller loading is a way of prolonging belt life since load volume can be increased with a relatively small increase in the area contacting the belt. Also, a slower belt speed tends to decrease wear by reducing the agitation of load particles as they pass over the idlers.

Dropping heavy, sharp, jagged lumps directly against the belt is responsible not only for a large percentage of abrasive wear but also for cuts, gouges, and fabric breaks. Methods of reducing such wear include the following:

(1) Using a loading arrangement in which fine material falls on the belt first, acting as a cushion for larger lumps. This may be accomplished by installing a screen or a series of openings in the chute some distance from the discharge edge, through which fine particles fall while larger chunks travel to the chute edge before dropping on the belt; similarly using a grating consisting of parallel bars; or notching the mouth of the chute so that fine materials can fall to the belt through narrower notches while larger chunks travel farther before leaving the chute.



• Sand and fines have clogged the center idler, causing it to jam. The movement of the belt has worn away the rim, producing sharp, pointed edges.

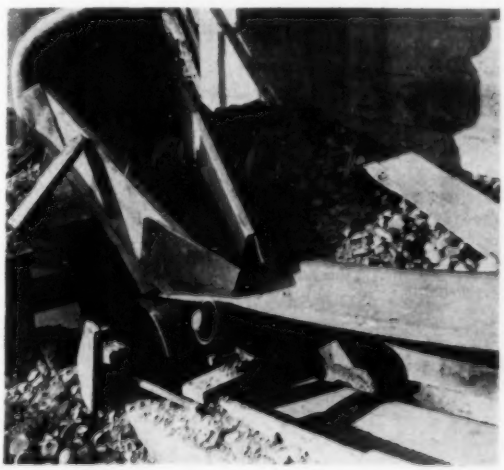
(2) Using jingle bars. If the chute discharges 3 or 4 ft. above the belt, or is so steep that lumps fall with considerable velocity, sheet-iron or steel-bar baffles (jingle bars) can be suspended over the chute to slow lump movement.

(3) Reducing the chute angle. Chute angles should be kept low enough to prevent lumps from bouncing excessively after they have landed on the belt. On conveyors operating on steep slopes, say 12 to 20 degrees, loading should be preferably on a flatter slope, up to the maximum of 9 degrees. The belt should pass to the steeper slope through a smooth curve (catenary) of ample radius. A low chute angle, combined with proper direction and speed of load, causes lumps to strike the belt at a grazing angle, which induces less impact damage than when lumps strike more squarely.

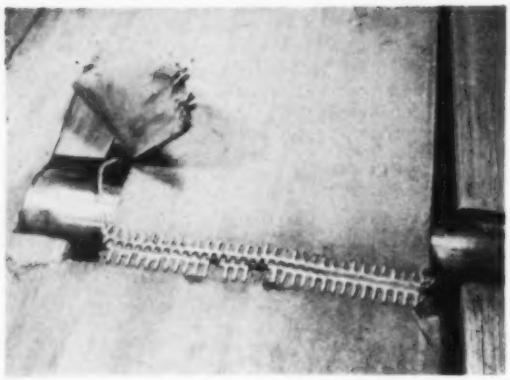
(4) Using a feeder belt. A short conveyor belt, usually of heavy construction, sometimes is used as an intermediate step between the loading chute or bin and the main belt. The short belt absorbs most of the wear resulting from loading impact. It can be replaced at a smaller cost than the main belt. The speed of the feeder belt, which usually discharges its load in the direction the main belt is moving, can be varied to control the loading rate.

(5) Using a pad belt. A short auxiliary belt can be installed under the main belt at the loading point in such a way that two thicknesses of belting absorb the load impact. The pad belt has its own anti-friction-bearing terminal pulleys and runs over two or three of the main belt's troughing idlers. It should have independent take-up adjustment. A pad belt is moved by friction between it and the main belt.

(6) Properly arranging pulleys at the loading point. Correct location of idlers at the receiving point is important. Heavy, large-sized material discharging directly over an idler or pulley subjects the belt to pounding, as if between a sledge and an anvil. If it is impossible to avoid locating pulleys directly un-



• Here the discharge falls on the belt directly over the tail pulley. The belt is pounded by rocks as if between a hammer and an anvil; there is no chance for the belt to "give". If the chute discharges directly over the idler pulleys, the effect is virtually the same. The chute above should be adjusted to discharge about 18 in. ahead of the idler.



● An obstruction has torn this belt at its weakest point—a longitudinal seam. Belt hooks are broken, and steel lacing pins are bent back.

der the loading point, belt damage can be minimized by a special cushioning device such as a pneumatic impact carrier. Some operators avoid pounding by removing the middle roll of the carrier directly under the lip of the chute.

Defective Idlers

Faulty lubrication or clogging with sand or other material sometimes prevents idler pulleys from turning. If an idler jams, constant rubbing of the belt will wear the rim entirely through, producing a sharp, jagged edge. This can be extremely destructive to the rubber cover of the belt and the fabric reinforcement. In addition, such a condition results in an appreciable increase in power consumption.

Inspection and greasing of idler pulleys should be a matter of strict routine, both to protect the belt and to save power. When the idlers are inspected, it is advisable to remove any material that may have become caked in the ridges on the pulleys, particularly on the return side. These ridges sometimes distort the belt to such an extent that adhesion between plies is broken.

The man in charge of oiling should be cautioned against excessive lubrication. Grease or oil on the belt will soften and swell rubber that is not oil-resisting, and may cause it to peel away from the fabric. Greasing pressure that is too high also forces the grease seals from the ends of bearings, permitting entrance of dirt, with resulting increase in friction and destruction of bearings. A coating of grease on the pulleys also permits material to adhere and build up on the surface.

Idler Spacing

A conveyor is originally designed with idler carriers spaced closely enough to support the belt so that it does not sag between the carriers. Spacing is determined by the amount of tension in the belt. If there is too much sag, the load shifts as it moves from carrier to carrier. Besides consuming power, shifting causes considerable wear on the belt surface. Operators anxious to utilize every refinement to save power and reduce belt wear can realize an appreciable improvement by graduating idler spacing from one end of the belt to the other, proportioning spacing to belt tension (the lower the tension, the closer the spacing should be). Tension on the carrying side decreases from the maximum at the head pulley to the minimum at the tail pulley.

If a spacing of 4 ft. is necessary at the head pulley to prevent excessive belt sag, it may be necessary to decrease the spacing gradually to the minimum of 2 or 2¼ ft. at the tail pulley. Just what the exact spacing should be at various points depends on load, belt tension, belt width, and slope of conveyor.

Other Maintenance Hints

Skirt boards are often used at the discharge end of the loading chute to prevent spillage and to shape the load. The use of skirt boards along the length of the belt should be resorted to only when absolutely necessary, since they are frequently a cause of excessive wear on belt covers.

Scraper bars, set at an angle to the belt and in light contact with its surface, may be used to remove lumps. Caked material may be removed either by a scraper bar or a water spray.

Belts may be protected from trapped lumps by installing decking over the entire return side of the belt.

Conveyor belts are best repaired by electrically-heated vulcanizers if such service is available. Repairs usually require the replacement of broken carcass plies of woven fabric or cord and replacement of missing cover patches with new unvulcanized stock. A well-balanced and economical belt repair program is the best insurance any operator can have to make his efforts successful in reducing the per ton cost of materials handling.

The classic "ounce of prevention" *is* worth a "pound of cure" when it comes to getting the most out of your investment in conveyor belts. If your maintenance group does not include a conveyor expert, it is wise in the long run to consult a belt specialist who will help you select the proper belts for your jobs and assist with the design of equipment and parts affecting belt life. Call in the belt specialist, too, to review the installation as it appears in service.

Washington News Letter

(*From page* 68)

exaggerated form. Taxation is politically and economically distasteful. Failure to tax will result in inflation, an equally distasteful prospect.

Here is how the Federal Reserve Board sums up the situation: "Adequate taxation to balance the budget should be the first aim of fiscal policy at the present time. Under existing conditions a budget deficit, however financed, will increase inflationary pressures. Borrowing from banks, which would result in further expansion in the money supply, would be the most inflationary form of deficit financing. Borrowing from non-bank investors, while less inflationary during the rearmament period, would enlarge the public's holdings of government securities and thus increase the prospects of greater inflationary pressures in the future. Additional taxation, which will bring government revenues in balance with expenditures, is a first and essential step in moderating the inflationary impact of the increased federal spending necessitated by the rearmament program."

Despite this very sound advice, Congress will probably compromise the issue. We are likely to have some more taxes and some more inflation. From present indications, Congress will enact sufficient taxes to cover only about half the deficit. Probably the income tax rates will not rise by 4 percentage points, and all the excise taxes asked by the President will not be enacted.

The Jefferson Lake Sulphur Co., Inc., reports for the year ending December 31, 1950, a net profit after taxes of $1,246,192 with $3.35 earned per common share.

Report on Current Labor Developments

The 10 Percent Catch-Up Formula

AFTER more than a month of debate, the Wage Stabilization Board finally voted on a formula to permit workers whose wages had lagged behind the procession to catch up. This provided the occasion for the labor members of that Board to leave and to begin their policy of non-cooperation with Mr. Wilson, the Administration and all its parts.

The labor members made it very clear that it was not the 10 percent formula, as such, that they were objecting to. It just served as the symbol for the walkout. As a matter of fact, it has been reported by many around Washington who insist they are "in the know" that two weeks earlier the labor members had agreed to an almost identical formula.

A 10 percent increase in wages since January, 1950, is actually greater than the increase in the cost-of-living index since that date. Furthermore, the Wage Stabilization Board's regulation states in its very first section that "This ten (10) percent figure shall be reviewed in the light of the April, 1951, index number of the official Consumer Price Index (revised) of the Bureau of Labor Statistics when published." This index number will be published according to schedule around the end of May. It appears that the 10 percent formula was supposed to last only until then, with the clear implication that if the cost-of-living index rose substantially, it would probably be liberalized.

The catch-up formula was adopted by the Wage Stabilization Board on February 15. For almost two weeks it remained inoperative while the storm raged. Finally, on February 27, Eric Johnston, the Economic Stabilization Administrator, stopped the uncertainty by approving the regulation as originally passed by the Board but he took the precaution of making certain recommendations for its liberalization.

How the Formula Works

To give a wage increase up to 10 percent of the January, 1950, straight time average hourly earnings does not require the approval of the Wage Stabilization Board, but it does require great care, or else the employer is liable to find himself in violation of the Economic Stabilization Act of 1950 and subject to its penalties.

The general rule as stated in the regulation is, "If general increases in wage and salary levels in an appropriate employee unit have been less than ten (10) percent since the base period, future increases in wages, salaries, and other compensation may be permitted in amounts up to but not in excess of the difference between such past increases, if any, and the permissible ten (10) percent." Here is how it is applied:

Step I—Determining the Appropriate Employee Unit

The first thing an employer must do to find out what action he can take under this formula is to determine his appropriate employee units. Here he must first separate his wage earners from his salaried employees.

For his wage earners an appropriate employee unit would be all the employees in a recognized or certified collective bargaining unit, or all the employees in a plant, or in an establishment, or in a company, as best adapted to preserve contractual or historical relationships. In a few cases an appropriate bargaining unit will be an entire industry, particularly where collective bargaining has been conducted on an industry basis. This rule permits a wide variety of choices. However, once the employer has made the choice and given a wage increase on that basis, he will probably not be permitted to change the appropriate employee unit unless he secures approval from the government. Furthermore, he may be required to justify his choice by demonstrating the contractual or historical relationship which it preserved.

For his salaried employees, an appropriate employee unit would be all the salaried employees in each plant, or in each major business division or in each certified or recognized collective bargaining unit. Once these units are determined, it will be necessary to divide them up into smaller units, one of which would include all those employees who qualify as "executive, administrative, professional, or outside sales personnel" under the Fair Labor Standards Act, as amended; the other would include all the other employees.

By S. HERBERT UNTERBERGER
Director of Research
Labor Relations Information Bureau
Washington, D. C.

Step II—Determining the 10 Percent

Once the appropriate employee units are known, the next problem is to determine the average wage or salary level in each unit during the base period, which is the first regular payroll period ending on or after January 15, 1950.

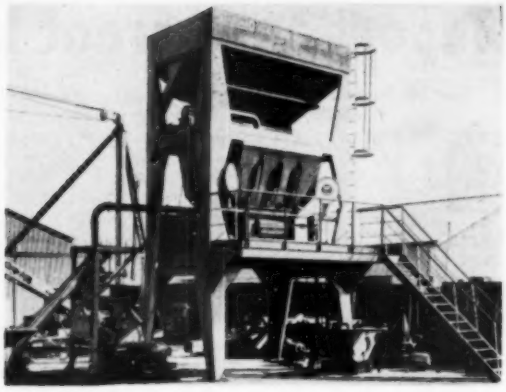
If any appropriate employee unit has no payroll period ending on or about January 15, 1950, because it was not in operation at the time, or because it had plainly abnormal pay levels during that period because of seasonal peculiarities, broad changes in product mix, wide swings in employment, and the like, the employee may apply to the Wage Stabilization Board for appropriate and supportable adjustments of the base period pay level figures against which employee compensation changes are to be measured.

Wage and salary levels include time and incentive earnings, commission earnings, and actual or prorated sums of any regularly paid bonuses and night shift differentials. Pro-ration of bonuses, incentive earnings, etc., to a payroll period shall be done by allocating to that payroll period a proportionate share of the total of those payments within the appropriate employee unit over the calendar year or a shorter period of time if that is representative of the particular type of payments. Excluded, however, are overtime premium payments, employer contributions to or payments of welfare benefits, employer contributions to pension funds or annuities, and other like benefits.

Wage levels for units of wage earners are to be expressed as average straight time hourly earnings. Salary levels may be computed on the basis of regularly scheduled weekly, bi-weekly, semi-monthly, or monthly pay periods.

Once the base period earnings figure is known for each appropriate employee unit, 10 percent of it is calculated, and this is the total amount allowable for general wage increases to employees in the unit. However, general wage increases already given to employees in the unit must be deducted from the amount to find out how much is still allowable for future general wage increases.

(*Continued on page* 100)



ABOVE: This newest type, 3,000-lb. capacity Amalga-Pave plant will be erected at the Clark Halawa Quarry by Hawaiian Amalga-Pave, Ltd. AT LEFT: A view of the plant at Rockfield, Calif., where lump asphalt is weighed and ground in hammer-mill at the base of the plant, then blown to the cyclone collector and fed to the pug-mill mixer. BELOW: Spreading and rolling the Amalga-Pave mixture on a street-paving job at Fresno, Calif.

Cold-Mix Process Interests Producers

By HARRY F. UTLEY

ONE of the outstanding developments in the field of bituminous paving materials of the last decade, the Amalga-Pave cold-mix cold-lay process for bituminizing aggregates is attracting considerable interest among aggregates producers.

By this process, high-type asphaltic pavements are being produced at costs said to be below those heretofore experienced for similar plant-mix work, due principally to the simplified plant employed. In preparation, this material is batched and mixed in a manner strikingly similar to concrete in that the mineral aggregates are cold-mixed with a binding medium—cement and water in the case of concrete, and powdered asphalt and flux oil in the case of Amalga-Pave. In fact, ordinary concrete mixers have been employed for demonstration purposes to prepare mixtures, without gumming up the drum and blades.

One of the country's largest aggregates producers, Pacific Coast Aggregates, Inc., of San Francisco, after pilot-plant operation at its Fair Oaks, Calif., plant, now has a large stationary Amalga-Pave plant permanently in operation at its Rockfield, Calif., crushing-and-screening plant, where it batches, mixes, and stockpiles large tonnages of mixtures for paving use throughout central California.

In the Pacific Northwest, City Paving & Material Company of Portland, Ore., owned and operated by Porter W. Yett, is another established operator. Mr. Yett also owns and operates several "hot-mix" paving plants and is considered an authority in the asphalt-paving field.

Dolese Bros. Company, 13 N.W. 13th St., Oklahoma City, Okla., operator of four crushed stone plants and two sand plants in Oklahoma and Kansas, has recently been exclusively licensed to produce Amalga-Pave in these two states and will install a plant this spring at its crushed stone plant and quarry at Richards Spur, Okla. Under this license, Dolese Bros. may sub-license others in the states of Oklahoma and Kansas.

At Rapid City, S. D., one of the state's leading producers of aggregates, Pete Lien & Sons, is also preparing to erect a plant to supply this type of material for paving and maintaining South Dakota roads and streets.

Outside of continental United States licenses have been executed covering the Territory of Hawaii and the Republic of the Philippines. A 3,000-lb. Standard Steel plant has been shipped to Manila and is now ready for operation. The plant of Hawaiian Amalga-Pave, Limited, is under construction, and it should be in operation by June of this year. It will be erected at the Clark Halawa quarry in Honolulu.

The Amalga-Pave process was discovered by research engineers of the Union Oil Company of California, owner of the patent. Complete information regarding Amalga-Pave may be obtained from National Amalga-Pave, Inc., 357 So. Robertson Blvd., Beverly Hills, Calif., which is also the licensor.

Standard Steel Corp., well known builder of asphalt-paving plants, is manufacturing Amalga-Pave plants for this process. The plant consists of a conventional weigh-box and mixing unit and includes a special asphalt-pulverization unit, along with the necessary equipment for injecting the liquid "B.G.S." flux oil into the pug-mill. Standard can furnish

these plants in a variety of sizes. The most practical sizes, however, from the standpoint of operation appear to be 2,000-, 3,000-, and 4,000-lb. capacity.

Amalga-Pave plants require no rotary drier, steam boiler, dust-collecting system, hot-stone elevator, screens, heated asphalt pits, etc. No preliminary "firing up" is ever necessary; operations can start or stop at a moment's notice. A plant can be operated in any locality, being a smokeless and dustless operation. Labor costs are low, only the batching operator and one laborer being required for capacity output. Finished material may be stock-piled for long periods or shipped great distances without the slightest deterioration.

Blended aggregates, graded to specification as required by good paving practice, and usually from 50 to 100 percent crushed material, are employed. According to J. R. Cassidy, Fresno district manager of Pacific Coast Aggregates, Inc., the plant at Rockfield turns out four standard types of mix, top size of aggregate of each being ¾-in., ½-in., ⅜-in., and 3/16-in. The mix with a ⅜-in. maximum size of material is in greatest demand, however, accounting for about 85 percent of production. Proportions of this mix, per ton of finished material, are weigh-batched as follows:

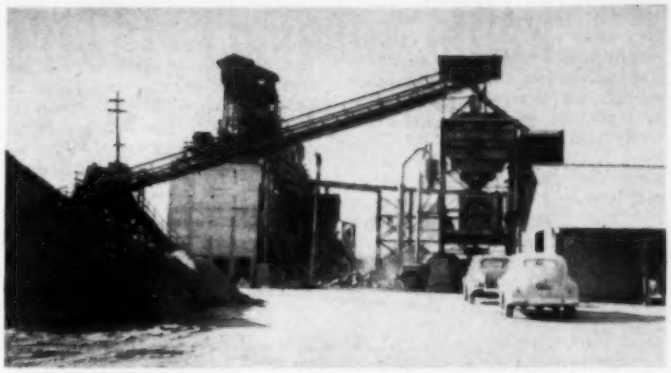
⅜ to 3/16 in.	480 lbs.
3/16 in. to No. 10...	362 lbs.
Crusher dust 1,030	lbs.
Pulverized asphalt ..	64 lbs.
Flux oil	64 lbs.
Total 2,000	lbs.

Since more than one-half the volume of the batch consists of waste crusher-dust (minus No. 4) product, an analysis of the "dust" might be of interest. It shows 85 percent passing No. 8-mesh, 50 percent passing No. 16, 32 percent passing No. 30, 23 percent passing No. 50, 17 percent passing No. 100, and 13 percent through No. 200-mesh.

Aggregates are stored in a compartmented steel bin at the top of the plant. The asphalt is obtained from various petroleum refineries throughout the country and is received in lump form. It is a material having a 0-5 penetration and a melting point in excess of 250 deg. F. After reduction to "egg" size by a toothed roll, the hard asphalt is automatically weighed and fed into a Williams impact mill, where it is pulverized and introduced as a powder into a pug-mill mixer together with "B.G.S." flux oil and the graded aggregates. The "B.G.S." flux oil is a non-volatile, non-paraffinic lube oil extract. It is readily pumpable at normal atmospheric temperatures and requires no heating. This particular type of oil has the ability to displace the moisture from the aggregate, thus making it unnecessary to heat and dry it. This alone represents a considerable money-saving advantage.

The mixing cycle takes less than a minute, "soft," "medium," or "hard" types of finished asphaltic paving material being governed by the amount of powdered asphalt and flux oil used per batch. The finished product is discharged directly into railroad cars, or to dump trucks for delivery to the job, or for stockpiling. "The ability of Amalga-Pave to retain workability over comparatively long periods commends this mix for maintenance stockpiling," the U. S. Public Roads Administration recently reported, following a survey-study made by J. T. Cassell, one of its highway engineers, of numerous jobs in California.

Widespread interest of aggregates producers in this process stems largely, of course, from the profit possibilities afforded. A simplified Amalga-Pave plant on his property thus enables the producer to utilize his own materials to the fullest extent, many of these being in the waste- and surplus-size range. Transportation and weighing facilities are already available, so that total investment usually entails only the low-cost plant itself. The necessary petroleum fractions are readily obtainable from the nearest refinery and, being by-product materials for the most part, promise to be in good supply in times such as those faced at present when sorely-needed paving improvements are threatened with delay due to the lack of scarcer materials.



The Amalga-Pave Plant operating in conjunction with Pacific Coast Aggregate's sand-and-gravel plant at Rockfield, Calif. Belt conveyor carries aggregates directly to bins of the Amalga-Pave Plant.

New Vibrator Cleans Out One Ore Car in 10 Seconds

One of the worrisome problems that seems to be built into much materials-handling equipment is the affinity of material for the sides of chutes, bins, and hoppers. Bottom-dump ore cars, for example, are often bumped with a sledge hammer or a locomotive to shake out "sticky" material. But such a solution is expensive both in equipment maintenance and in time consumed. A better solution to this problem would be a small one-man-operated air vibrator, Type LSRR, such as the one recently brought out by the Cleveland Vibrator Company of Cleveland, O.

One-man operation empties a car in seconds.

Using the vibrator, as shown in the accompanying photograph, one man at the Bunker Hill & Sullivan Mining and Concentrating Company of Kellog, Idaho, trips an ore car, handles the complete vibration equipment, and empties the car in 10 seconds. Not only is bumping eliminated, but dumping time is cut one-tenth to one-third of that formerly required.

"By actual count," according to L. M. Griffith, chief electrical engineer for the Bunker Hill Company, "one train was bumped 120 times in an effort to shake the ore out of the cars." Using the Cleveland vibrator, this bumping has been eliminated, resulting in a "very material saving in locomotive maintenance and increased car life. It is planned to install vibrators at all main haulage dumping points."

The vibrator being used on this installation is permanently installed on an air line alongside the track near the ore pocket. A female receptacle for receiving the vibrator is welded on the sloping sides of each car near the bottom. As a car is pulled over the pocket, the dump is tripped, the vibrator is slipped into the receptacle, and the air is turned on by a foot-operated valve. Intensity of the vibration can be varied by the operator from gentle taps to hammer-like blows. Within seconds the car is emptied clean, the vibrator is lifted from the receptacle, and the next car moves into dump position.

2,000 Bag per Day Plant

(*From page 76*)

does away with seven tons of dead weight in an ordinary 5-room house. Used in exterior stucco, it abolishes another six tons of excess weight by replacing the heavy sand ordinarily used in stucco mixtures. Too, there is the insulating value which keeps the house cooler in summer and warmer in winter, with higher resistance to cracking than plaster walls ever enjoyed before."

In San Francisco, where chilly fogs roll in almost daily and frequent earthquakes play hob with plaster walls, Nature has set up an eager market for the product which is apparently going to demand a lot of Tony Almeida's output for a long, long time.

Labor Developments

(*From page 97*)

Step III—Deducting Prior General Wage Increases

Any wage increase which raised straight time earnings by one percent or more is regarded as a general wage increase and must be deducted from the allowable ten percent. However, the following are not to be included in *prior* general increases: increases in other compensation such as night shift bonuses, overtime premium rates, vacation, holiday and like allowances, and contributions of employers for pension, insurance, and health and welfare benefits, merit and length of service increases, and increases resulting from promotion and reclassification.

Step IV—Deducting Future General Increases

After deducting these prior wage increases from 10 percent of the base period earnings, the employer may give the remaining allowable amount in general wage increases without prior approval of the Wage Stabilization Board. However, here all wage increases are included as well as the pro-rated increases in other compensation such as night shift bonuses, overtime premium rates, vacation, holiday and like allowances, and contributions of employers for pension, insurance, and health and welfare benefits. Not included are merit and length of service increases, and increases resulting from promotions and reclassifications.

Step V—Reporting the Increase

Although prior approval for such allowable wage increases are not required, the wage increase is legal only if the employer reports it in writing to the nearest office of the Wage and Hour Division of the U.S. Department of Labor within 10 days after it has been made effective, showing the essential facts and methods of calculation. These reports are subject to review, and the increases on which they report are subject to revocation if they are found to exceed permissible limits.

Record High Output, Profit For Asbestos Corp. in 1950

Asbestos Corporation, Ltd., Montreal, Canada, in 1950 reported record earnings of $3,488,235, as compared with $1,138,234 in 1949. The firm's asbestos fiber output last year, although the largest in its history, could not completely satisfy demands from regular customers.

According to A. L. Penhale, president and managing director, the outlook for this year is encouraging. While reserves were decreased last year by 4,383,000 tons, a new ore body will be developed at the firm's Vimy Ridge mine, and a new plant will be built there.

Theory and Practice Combined In Civil Engineering Handbook

Practicing engineers as well as "shirt sleeve" producers looking for solutions to specific civil engineering problems will welcome the third edition of McGraw-Hill's *Civil Engineering Handbook*. Written by twelve of the country's leading engineer-authorities, this 1,002-page book offers hundreds of rules, principles, working instructions, and engineering pointers on such subjects as surveying, highway engineering, hydraulics, mechanics of materials, foundations, steel design, and cement and concrete.

Material for each of the ten sections of the book has been especially selected and organized to facilitate finding just what you want, be it a description of a residential sewage-disposal plant or an engineering aid related to the selection of a cement mixture for use in a dam intake. For instance, the section on concrete and foundations has been almost entirely rewritten by new contributors who thoroughly cover the field from both a theoretical and practical viewpoint.

Certainly all branches of civil engineering have made great progress since 1940, when the second edition of this book was published, and this new edition brings the contents in line with this progress. As a standard reference and an engineering tool, this handbook is well worth $8.50.

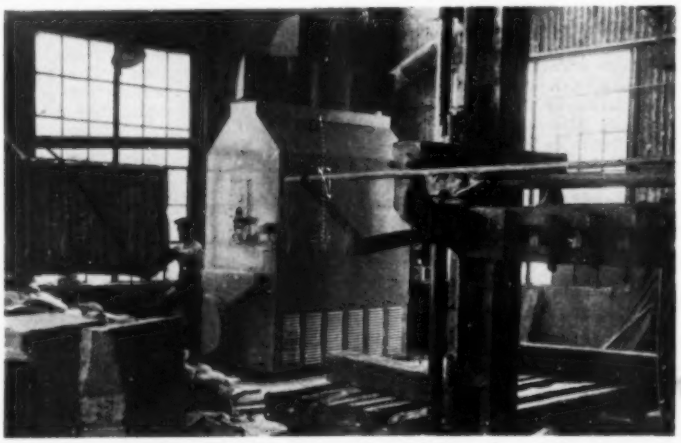
Natl. Gypsum Co. Reports Highest Sales, Profits in '50

National Gypsum Company's earnings and sales in 1950 were at the highest levels in its 25-year-history, according to a statement made by President Melvin H. Baker in the firm's annual stockholders' report.

Net earnings for 1950 were $8,861,608, or $4.19 a common share after preferred dividends. This compared with $5,436,874, or $2.57 a share, in 1949. Sales climbed to $75,990,039 from $59,439,883 in 1949.

Mr. Baker disclosed that the company had appropriated $12,633,000 in 1950 for plant improvements and expansion.

According to the statistics presented in the 35th annual report of the Hercules Cement Corporation, Philadelphia, Pa., income from sales during 1950 amounted to the sum of $7,065,078, and net income stood at $736,878. In 1949 the corresponding totals were $5,895,896 and $596,259. It was stated that new records were established in dollar sales, physical volume, and earnings (before taxes).



• The Rock of Ages Corporation plant in Barre, Vt., licked the problem of sub-zero temperatures by insulating their Transite walls with ¾-in. asbestos fiber and installing three direct-fired space heaters made by the Dravo Corporation of Pittsburgh. The heaters, one of which is shown in the background, not only cut the dampness, but also reduced absenteeism due to colds. The three self-contained units have a total output of 3,750,000 B.t.u.'s per hour.

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PIT AND QUARRY

● Underground Loader

An underground model of the "Lod-over" overhead tractor shovel designed for use with International crawler tractors T-9 and TD-9 is being manufactured by the Service Supply Corporation, Philadelphia 32, Pa.

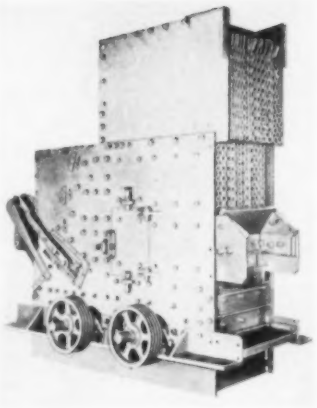
The new model was designed for use underground and can operate with only 14 ft. of headroom. It has a 1½ cu. yd. capacity, heavy-duty rock type bucket.

It is stated that this new model was especially designed for bomb shelter construction," as it can dig its own ramp as well as function as a front-end or an overhead loader.

● Heavy-Duty Breaker

The "Impact Master" is the latest heavy-duty impact breaker to be developed by the Construction Equipment Division of the Pettibone Mulliken Corporation, Chicago, Ill.

The machine features controlled impact action which regulates the breaking operation and directs the flow of material through the machine to produce a highly uniform cubical aggregate. There is a high ratio of reduction and large volume



production. All parts are easily accessible for servicing.

Breaking is accomplished by two rotating rotors carrying rigid hammers which intercept the rock in motion and break it by impact. Rotors operate at 550 to 1,000 r.p.m. A stripper bar and a lower screen grate limit the size of material discharged. Size of the aggregate is controlled by the speed of the rotor and the adjustment of the stripper bar and grate. All parts are protected with safety devices.

● Asphalt Sealer

An asphalt or blacktop sealing compound that waterproofs, seals, and smooths the surface is being made by the Trover Driveway Service, 2159 South Park Avenue, Buffalo, N. Y., and marketed as "Super Seal".

The material is easily applied and is said to give a glossy black finish that does not discolor, and that effectively seals and protects the surface. Old surfaces may be easily renovated, and new drives sealed for greater protection.

The material is claimed to be weather resistant. Gasoline, oil, salt, alcohol, solvents, and many acids do not affect it. There is no stickiness in hot weather, and the deep black color does not fade, according to the manufacturer. It is said that this overcomes many of the objections to blacktop.

● Light-Duty Truck Winch

A light-duty friction winch for ¾- and 1-ton trucks is being made by the Tulsa Winch Company, Tulsa, Okla. The winch is driven by a power take-off and has a friction clutch for easy operation. A large manual brake controls the drum under all loads. The drum is ball-bearing mounted and will handle a load rating of 7,000 lbs. This winch is said to be useful in moving pipe, pile driving, handling poles and small logs, and in similar operations.

● Boiler Water Treatment

A combination of hot process and zeolite treatment of boiler feed water is announced by the Worthington Pump and Machinery Corporation, Dunellen, N. J.

Use of a Styrene base resinous zeolite makes possible the application of hot process treatment, with its de-aerating and silica reduction features and zeolite softening. This gives uniform hardness reduction to 0.2 p.p.m. without addition of excess sodium alkalinity. Washing and regeneration of the zeolite is provided in the new system with the minimum of interruption.

The "Super-Scoopmobile" is the largest of the line of materials-handling machines built by Mixermobile Manufacturers, 8027 N. E. Killingsworth Street, Portland, Ore. The scoop holds 5 cu. yds. The machine weighs 18 tons and is powered by a 250-hp. diesel engine. It is claimed to be the largest materials-handling machine of its kind.

B.F.Goodrich

Ready for 45 tons on a 60,000-mile trip

MIKE WEATHERBY, shown left above, is supervisor of a man-sized moving job.

As an operator of off-the-road equipment for the Basalt Rock Company, Napa, California, he hauls average gross loads of 45 tons of sand and gravel from the pits to the company's processing plant.

And because the BFG Universal tires on his rig can take it, he moves more materials farther, at less cost to his company.

These big tires have greater bruise resistance — greater ability to absorb and withstand the shocks encountered in drive wheel service under such heavy loads. This is because these BFG tires have the patented *double nylon shock shield* built between the tread and rayon cord body. Yet this added protection (which is exclusive with B.F. Goodrich) is provided at no extra cost to his company.

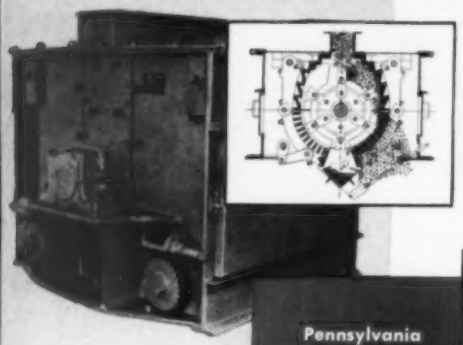
While pulling 90,000 pounds to the plant, Mike's equipment encounters soft, wet dirt and gravel — hard on traction — with an occasional sharp rock thrown in as a surprise package. Yet the special rubber compound built into the husky, wedge-shape tread lugs resists cutting while giving positive two-way traction.

And these tires have been giving an average of 60,000 miles of service!

B. F. Goodrich builds special off-the-road tires for every type of hauling job. See your local B. F. Goodrich dealer. Start now to enjoy the benefits of longer tire life and lower operating overhead. *The B.F.Goodrich Company, Akron, Ohio.*

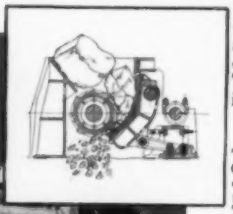
RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

Pennsylvania Reversible Hammermill

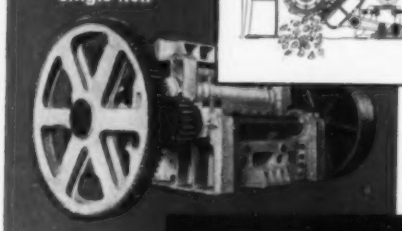


why Pennsylvania makes many types of crushers

Crushing problems are seldom, if ever, identical because of variables such as product, feed size, capacity, moisture content, and physical and chemical structures of material—*and no one type of crusher can meet all of them.* That's why Pennsylvania has a large and varied line, a portion of which is illustrated here. In this line there is a type of crusher adapted to deal with each individual job no matter what it may be, and since our engineers are not limited to only one or two types when making a recommendation, you can be assured there is no bias or prejudice in favor of a specific crusher. This is one of the very good reasons to at least get Pennsylvania's counsel on every crushing job. Even if you aren't ready for a new crusher we'll be glad to check your operation and report on its efficiency. This could well be the first step towards reducing your operation costs.



Pennsylvania Single Roll



REVERSIBLE HAMMERMILL

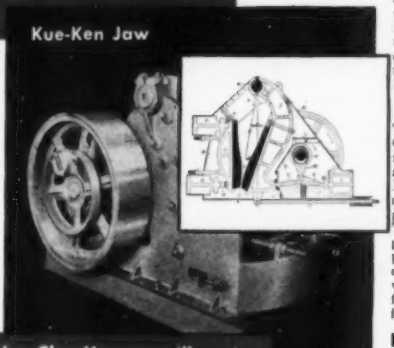
The Pennsylvania Reversible Hammermill with 2 Zone Crushing and Adjustable Cage offers great economy in operation and maintenance while producing a coarse or medium fine product without using a closed circuit system. The Reversible feature virtually makes this machine two crushers in one. Press a button—today clockwise—tomorrow, counter clockwise. Send for Bulletin 1034.

SINGLE ROLL

Requiring surprisingly little headroom, Pennsylvania Single Roll Crushers are powerful machines that have big hourly capacities at low cost per ton and can handle wet, sticky and frozen materials without choking or jamming. Massive Breaker Plate is easily adjustable to or from the Crushing Roll. This permits product size change at any time and also compensates for gradual wear of working parts. Send for Bulletin 2011.

What type of crusher do YOU use?

Kue-Ken Jaw



KUE-KEN JAW CRUSHER

The improved design of the Kue-Ken Jaw Crusher, using the "crushing without rubbing" principle, is the one great advancement in jaw crushers in many years. It replaces the old, poorly lubricated, slow speed, unavoidably heavy machine that gave operators a low opinion of the jaw. The Kue-Ken gives you — 2 to 5 times greater capacity, 5 to 10 times longer jaw plate life, much lower power requirement, a completely enclosed oil bath lubrication with clean, constantly filtered oil, and other features that put the Kue-Ken way out in front. Send for Bulletin 5011.

Dixie Non Clog Hammermill

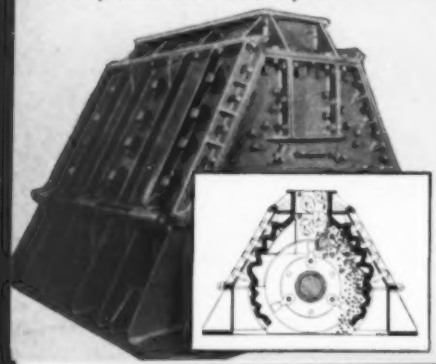
DIXIE NON-CLOG HAMMERMILL

Wherever sticky, wet materials may be encountered, there the Dixie Non-Clog Hammermill is without parallel in efficiency. The moving, extended Breaker Plate keeps the most difficult mucky feeds from choking the mill, holding production at peak capacity. The crushing is done *on* the numerous moving Breaker Plates, therefore wear is distributed over a large area, prolonging plate life, thus reducing maintenance cost.

REVERSIBLE IMPACTOR

The Pennsylvania Reversible Impactor reduces by direct impact at controlled slow speeds, producing cubed particles uniform in size. Reduction ratio is quite large, a reduction of minus 10" feed to ¼" in one operation is not unusual (closed circuited with external screening or separating equipment). This is an ideal crusher for high silicas and abrasive rocks, clinkers, minerals and chemicals. The Reversible Rotation feature doubles the life of principal working parts. Send for Bulletin 6016.

Pennsylvania Reversible Impactor



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PENNSYLVANIA CRUSHER COMPANY

PENNSYLVANIA CRUSHERS

More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. MSA Pneolator. (Bulletin CH-2) Pamphlet describing a new automatic artificial respiration instrument which works without suction, using positive pressure to provide uniform lung ventilation in cases of respiratory failure. Mine Safety Appliances Company.

2. Falk Steelflex Couplings. (Bulletin 4115) Notebook folder describing and illustrating the piloted Type P couplings that carry weight of extended shafts without intermediate bearing support. Cutaway drawing shows workings of inner flexible gridmember. Falk Corporation.

3. Nordberg Diesel Engine. (Bulletin 185) Two-color bulletin which illustrates and describes the Nordberg Type 4FS1 and 4FS2 one- and two-cylinder diesel engines. Illustrations show models with generator, clutch, pump, and stub shaft power take-off; plus a breakdown of component parts. Nordberg Manufacturing Company.

4. Pulsating Magnet Electric Vibrators. Tear sheet describes the semi-noiseless models of Syntron electric vibrators with variable power controls. Lists specifications for four models varying in vibration weight from 30 to 247 lbs. Syntron Company.

5. Directory of Link-Belt Products. (Book 1953-E) This 48-page booklet is for the man who often says, "Why, I didn't know that Link-Belt made that." It lists this company's equipment made for elevating, conveying, screening, drying, and the mechanical transmission of power. Amply illustrated, it contains listings of subsidiaries, plants, branch stores, and district offices. Link-Belt Company.

6. Buda Jacks. (Catalog 1515) Rachet, screw, and hydraulic jacks in capacities from 3 to 75 tons are illustrated and described in this 16-page catalog which features a table to help select the correct jack, application pictures, recommended uses, and specifications. The Buda Company.

7. Controlled Impact Action. (Bulletin PMIM-1) This 8-page booklet explains the operating principle, performance, construction features, and specifications of the PMCO Impact Master Model 3240 heavy-duty breaker. Pettibone Mulliken Corporation.

8. Tulsa Winch and Power Take-Offs. Two notebook sheets describing, illustrating, and listing specifications for the Tulsa model 3F-10 winch with light-duty friction clutch, and for 12 Tulsa power take-offs. Tulsa Winch, Division of Vickers, Inc.

9. Torque-Arm Speed Reducers. (Bulletin No. A602) A 12-page catalog describing the construction and specifications of Dodge single reduction speed reducers with output speeds from 115 to 350 r.p.m. and in capacities to 27 hp. Accompanying tables offer helpful selection data. Dodge Manufacturing Company.

10. Underground Lodover. (Form LO-300) Notebook sheet which briefly describes, illustrates, and lists specifications for Lodover 1¼-cu. yd. combination overhead and front-end shovel, a special adaptation for International T-9 and TD-9 tractors. Service Supply Corporation.

11. Caterpillar Products. (Form 30081) The complete line of Caterpillar products—with the exception of two recently-announced diesel engines—is presented in this 40-page annual catalog. Pictures and brief specifications are given for all 81 products, nine of which were announced during the last year. Caterpillar Tractor Company.

12. Blue Brute Hand-held Rock Drills. (Bulletin #H-1200-B42) Describes Worthington's WJ-45 and WJ-55 hand-held, light- and medium-weight all-purpose drills. Detailed specifications listed for each. Worthington Pump and Machinery Corporation.

13. Micromax and Speedomax Speed Recorders. (Catalog N-27) This revised 20-page catalog discusses and compares the principles of operation and the special advantages of various tachometers and indicating recorders. Contains numerous illustrations of installations. Leeds & Northrup Company.

14. Cummins and General Motors Powered Euclid Equipment. (Form EGM-1 and ECE-10) Two 16- page booklets listing the various diesel engines and the Euclid equipment in which they are available. They include specifications for scrapers, loaders, rear-dump, and bottom-dump hauling units. Euclid Road Machinery Company.

15. General Lubrication Recommendations. A book containing general lubricating recommendations compiled in collaboration with the service departments of the manufacturers of heavy-duty equipment. Describes D-A engine oils, gear lubricants, gun greases, and high-melting-point lubricants. D-A Lubricant Company, Inc.

16. Stedman Dyna-Matic Vibrating Screen. (Form 351) This folder describes the features of the Type M-D high-capacity vibrating screen with circular motion in a balanced type unit. Designed for medium-duty service with capacities up to 50 t.p.h., this all-steel screen uses only 1 to 3 hp. Stedman Foundry and Machine Company.

17. Tension Linkage Handbook. Numerous examples of tension linkages are shown and described in this bulletin. Various types of roller chains used in tension linkage applications—where the chain need not be an endless belt, as in a power transmission drive—are illustrated and described. Baldwin Duckworth, Division of Chain Belt Company.

18. Fowler Challenger Mark III. This flyer illustrates and lists specifications of new British diesel crawler tractors ranging from 20 to 95 hp. now available

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in this country through John M. H. Shline Company. Tractors have six forward and four reverse speeds, and may be ordered with extra gear box, giving 12 forward and 8 reverse. John Fowler & Co. (Leeds) Ltd.

19. **Western Precipitation C.M.P. Unit.** A folder describing the multiple advantages of the Combination Multiclone-Cottrell Precipitator, which subjects airborne particles to mechanical and electrical precipitation. Specifications, advantages, and two installations are described. Western Precipitation Corporation.

20. **Aerodyne Dust Collectors.** This 16-page booklet explains the operating principle, performance, and application advantages of Aerodyne filters, based on the aerodynamic principle of separation and dust collection. Charts and drawings exemplify the features of this dust collector. Aerodyne Atlantic Corporation.

21. **The Manganal Marketer.** (Vol. 2, No. 9) Quick and inexpensive methods for rebuilding and repairing worn dipper teeth are described. Pertinent facts about where and how to use Manganal 11 to 13 percent manganese-nickel steel products to salvage worn dipper teeth are presented and illustrated. Stula-Sickles Company.

22. **The Lubrication of Automotive Diesel Engines.** An interesting and detailed explanation of diesel engine fundamentals. Discusses the function, selection, and care of lubricating oils; engine and oil tests; and other related subjects. Gulf Oil Corporation.

23. **Better Stone Crushing.** 8-page folder which tells the "inside" story of hammermills — descriptions and illustrations of construction features, dimensions, and capacities of American Series 30 ACB hammermills. American Pulverizer Company.

24. **Better Ways to Increase Plant Capacity.** Folder listing brief specifications of Gruendler jaw crushers, hammermills, roll crushers, feeders, screens, and other products, plus catalogs and bulletins available. Gruendler Crusher & Pulverizer Company.

25. **Soil Testing Services.** (Catalog 3-51). A 12-page catalog on new products in the soil testing apparatus. Includes illustrations and descriptions of "Soiltest" models of triaxial and consolidation apparatus and accessories, paraffin warmers, dispersion mixers, direct shear apparatus, humid boxes, classification sets, and many other testing supplies. Soil Testing Service, Inc.

26. **Wagner Tractor Loaders** and many interchangeable attachments for Case, Ferguson, John Deere, Ford, and Farmall tractors are illustriously described in a series of detailed, to-the-point folders issued by the manufacturer, the Wagner Iron Works.

27. **Liftruk.** (Bulletin 77). This notebook folder illustrates, describes, and lists the specifications for the 5-, 7½-, and 10-ton capacity "Silent Hoist" heavy-duty Liftruks. Extra attachments also listed. Silent Hoist & Crane Company.

28. **Truckstell On-The-Job-News.** This 8-page roto-tabloid tells the story of Truxmore's Trailing Third Axle, which allows more legal payload, and the Baumis-Truckstell Dual-Axle Drive, which features overdrive, underdrive, direct drive, and single-axle drive in one unit. The Truckstell Company.

29. **Permalite, the Leading Perlite Aggregate.** Savings up to 80 percent in dead load and amazingly lower construction costs are claimed for this lightweight aggregate in an 8-page booklet that lists other advantages, uses, fire ratings, mix design data, and considerable other information about a leading perlite aggregate — Permalite. Great Lakes Carbon Corporation.

30. **Hardinge BLM Clutch.** (Bulletin No. 45) This booklet explains via ample illustrations and detailed explanations the workings of various models of the BLM "Auto-Centri" clutch, a drive connection that automatically engages through centrifugal expansion to apply a smooth even loading to the driven machine. Hardinge Company, Incorporated.

31. **Split Rock, The Veneer With Distinct Charm.** This folder illustrates and describes various characteristics and physical properties of the various sizes, textures, and colors of this masonry material. Split-Rock Products.

32. **Lubricating Equipment Catalog for Contractors.** (No. 30) Compact, modern, mobile lubrication units to meet most requirements are described and illustrated in this catalog which explains how to keep construction machinery properly serviced at all times by providing on-the-job lubrication. Lincoln Engineering Company.

33. **Erickson, The Workhorse of Lift Trucks.** Platform models, fork models, optional equipment, and several custom-built models are listed in this descriptive booklet. Illustrations and specifications give the reader much information about lift trucks made by Erickson Power Lift Truck Incorporated.

34. **Athey Products.** (Condensed Pocket Catalog) Athey products have come forth with a pocket-size catalog that provides information about most of the products or variations built and sold by the company. Athey Products Corporation.

35. **JM-3000 Insulating Fire Brick.** The physical and thermal properties of an insulating fire brick for exposed and back-up service at temperatures up to 3000 deg. F. are explained in this 4-page illustrated folder published by Johns-Manville Corporation.

36. **The New 77 Howe Weightograph.** (Form 668) Twenty important features of this new automatic weighing accessory are listed, along with photographs and descriptions. The Howe Scale Company.

37. **ESCO Track-Walking Shoes.** (Bulletin #190) This bulletin contains detailed information about track-walking shoes for crawler tractors which, according to the manufacturer, allow the tractor to run on standard gauge rails, and mount or dismount at will, without injury to the rails. Electric Steel Foundry Company.

38. **Aquadyne Wet Water.** Wet water in readily usable form is new to industry. In many washing, cooling, wetting and blending applications, a wetting agent may be a money saver. This folder explains such an agent and its applicator. Aquadyne Corporation.

39. **T-Lock Amer-Plate.** This folder describes and illustrates a tough, long-lasting, acid-resistant lining for concrete pipe and structures, with a patented "T" which provides locked-in protection. General and physical properties such as composition, thickness, finish and application are fully explained. American Pipe and Construction Company.

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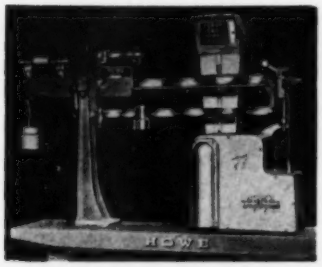
● Automatic Scale Unit

The "77 Weightograph" is a scale accessory that changes any beam type scale into an automatic. The device, a product of Howe Scale Co., Rutland, Vt., is



hooked to the beam and projects the weight in large letters on a mirror. The figures are projected by the latest type of illuminated optical projection, which makes them clear and easily read from any angle.

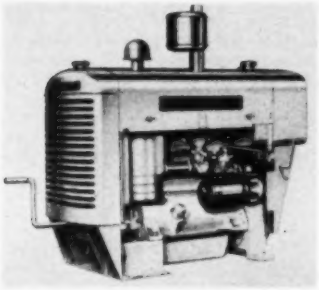
With the 77 Weightograph there is no need to adjust weights and poises. The mechanism dampens the movements of the beam so that it rapidly comes to a stop. Ball bearings assure easy, trouble-free operation. The device can be adjusted for various weighing capacities. It is claimed by the manufacturer that this device will give rapid, automatic operation to any kind of beam scale without complicated attachments.

● Interchangeable Engines

A new line of industrial engines consisting of a four-cylinder and two six-cylinder units is announced by Waukesha Motor Company, Waukesha, Wis. Interchangeability of mountings in each size for diesel-, natural gas-, butane-, and gasoline-powered models is a major feature. Many parts are identical in the diesel and carbureted models — cylinder blocks, sleeves, bearings and bushings, valves and springs, gaskets, coolant pumps, and governor parts.

The four-cylinder type is rated 22 hp. at 1800 r.p.m. in diesel and 25 hp. in other fuels. The six-cylinder models are 33 hp. and 45 hp. in diesel fuel, and 39 hp. and 46 hp. in other fuels.

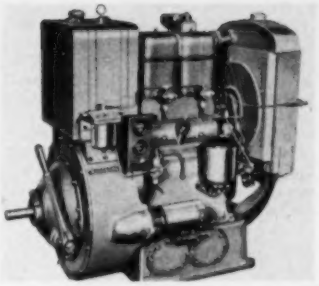
These engines are available with necessary carburetion for gas, butane, or gasoline, and with fuel injection for diesel operation. They may be had with or without fuel tanks, clutch, power take-off, skids, or slide rails.



● Two-Cylinder Diesel Engine

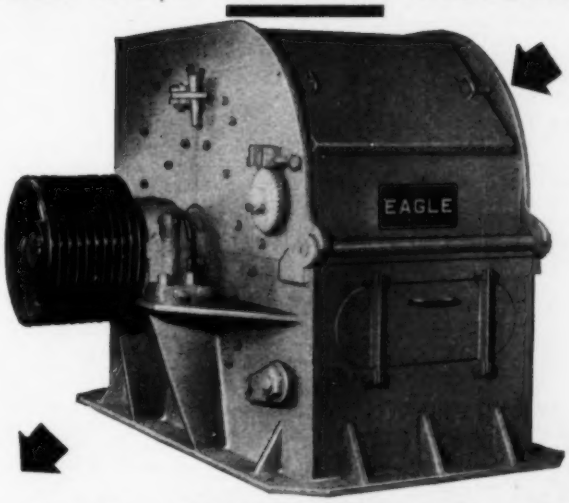
A two-cylinder diesel engine of 20-30 hp. with operating speeds of 1,200 to 1,800 r.p.m. is being made by the Nordberg Manufacturing Company, Milwaukee, Wis. The new engine is a heavy-duty, vertical, 4-cycle, mechanical injection diesel with 4½-in. bore, and 5¼-in. stroke, and is known as the 4FS2. It is a self-contained unit and may be obtained as a generating set, a pumping unit, or with clutch or stub shaft power take-off. Marine auxiliary models are also available.

The 4FS2 was designed to generate power for shovels, cranes, sand and gravel plants, lighting, and for stand-by service. The pumping units are applicable for washing, draining, dredging, and



general pumping. The power unit can be used for many applications—for driving compressors, blowers, well drillers, etc.

YOU GET MORE AGLIME



and it's BETTER AGLIME

The EAGLE 36-42 Hammermill . . . This big brother in a family of fine performing hammermills has more than demonstrated his fitness for ag-lime production. Uniformly high quality of output — often doing the job of both primary and secondary crushing — merit your consideration for your stone reduction problems. Send for new folder, P-451, giving full details.

Eagle also makes super-strength jaw crushers—the original, one-piece, electric welded crusher. Known for greater strength per pound crusher weight. Folder P-451-A will give you full specifications. Send for it today!

EAGLE
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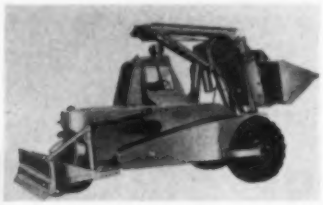
CRUSHER CO., Inc. GALION OHIO-U-S-A

● Hydraulic Scoop

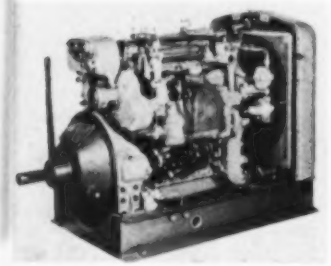
An improved Wagnermobile "Duo-Way Scoop" is offered by the Mixermobile Manufacturers, 8027 N.E. Killingsworth, Portland 20, Ore. The new model is fully hydraulic and features an 84-in. dozer blade at one end and a 1-cu. yd. scoop at the other. There are four speeds in either direction and highway speed to 20 m.p.h. The top section of the track folds down to 9 ft. 6 in. for low road clearance. Tilt control



of 10 degrees backward or forward, and unobstructed vision of each end are additional features. Power is supplied by a 114-hp. engine operating through planetary drive. It is designed for use as a loader, dozer, truck, and tractor.

● Dual Fuel Diesel

Users of natural gas can operate the Detroit Diesel Engine Division Series 71 with either diesel fuel or natural gas and a pilot diesel charge. New engines may be equipped with the new device or those in service may be adapted by means of a kit. The new device permits either



straight diesel fuel operation or natural gas-diesel fuel pilot charge operation.

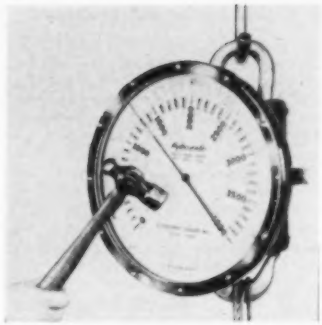
The natural gas is fired by a pilot charge of diesel fuel at the top of the compression stroke. The engine adjusts instantly to all diesel fuel in case of lowering of gas pressure. The series 71 is a 2-cycle engine. Detroit Diesel Engine Division, General Motors Corporation, 13400 West Outer Drive, Detroit 28, Mich.

● Tempered Dial Glass

A new impact-resistant, special tempered dial glass which eliminates the need for protective metal guards is now being used in "Hydroscales," made by Hydroway Scale, Incorporated, 20624 West Eight Mile Road, Detroit 19, Mich.

Resistance to severe blows without breaking, as well as several other advantages are pointed out by the manufacturers.

It is claimed that the new glass is



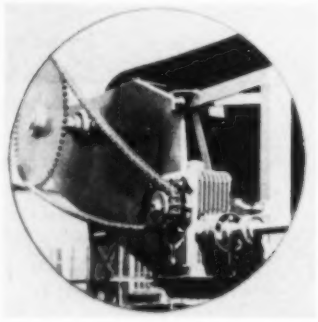
up to five times as strong as plate glass of equal thickness, yet will bend as much as 20 degrees without breaking. It will also absorb a thermal shock of 500 degrees without breaking or distorting, making it practical to use the scales wherever extreme temperature conditions exist.

The core of the new Hydroscale dial glass is relatively soft and the exterior surfaces extremely hard. It can be polished and wiped indefinitely without scratching.

● Protective Shunt

Olin Industries, Inc. (Explosives Division), announces a new protective plastic shunt for all its Western Electric blasting caps.

The new device is a sleeve of nonconductive plastic, to be slipped over the bare ends of the leg wire. The shunt, by covering the bare ends, minimizes possible corrosion due to atmospheric conditions. In order to prevent the sleeve from slipping off accidentally, the shunted wire is bent; but it can be easily removed when required, leaving the wires ready to be connected into the firing circuit. A product of Olin Industries, Inc., East Alton, Ill.



This cone-drive gear reducer combines light weight, small size, compactness, and low cost, according to the manufacturer, the Cone-Drive Gears Division of the Michigan Tool Company, Detroit, Mich. It is suitable for such applications as conveyors, to reduce overhung load, and, because of the completely enclosed gears, to afford protection from dust. The device weighs about 1/3 as much as the usual reducer of the same load capacity and has a 3-in. center distance.

● Battery Mine Trammer

A 1½-ton battery-powered mine trammer has been developed by the Locomotive and Car Equipment Divisions of General Electric Company. The trammer

can be had in any track gauge from 18 to 24 in. It is 71½ in. long, 35½ in. wide, and 38 in. high with standard battery. A four-pole, d.-c. motor designed especially for battery operation powers the wheels through a double reduction gear. Maximum speed is 7 m.p.h. alone and 3 m.p.h. at a rated pull of 400 lbs.

● Wound-Rotor Motor

Electric Machinery Manufacturing Company, Minneapolis 13, Minn., announces a new line of heavy-duty, wound-rotor induction motors. These motors provide variable speed drive, and are advantageous on applications requiring high starting torque and low starting current, or long acceleration periods. Built in ratings from 30 to 1,500 hp., drip-proof construction is furnished as standard on these motors. Splash-proof or enclosed, forced-ventilation models are also available. The heavy-duty, fabricated steel frame is said to have high physical impact strength and crack-proof steel-bar feet. Either ball or split-sleeve type bearings are available.

● Insulated Electrode Holder

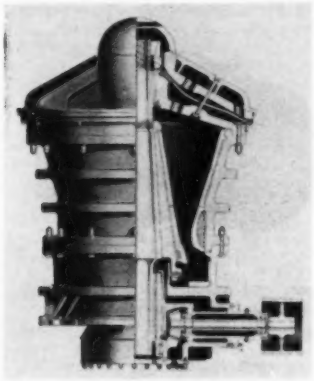
The Lincoln Electric Company, Cleveland, O., has developed an insulated electrode holder, the "LJ-1," of unusually small size.

The holder has a "lock-jaw" grip with an easy thumb release. Small size, light weight, and balance make it suitable for corners and confined areas, and for use with heavy gloves. New materials have been used to give it strength, ruggedness, and insulation. The holder is being manufactured in the 250-amp. size for 1/16- to 3/16-in. electrodes.

● New Gyratory Crusher

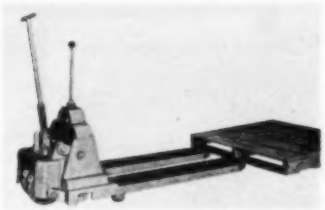
The "Superior" line of gyratory crushers, constructed of cast steel and featuring increased crushing ability, an improved crushing chamber, and greater flexibility of installation and adjustment, has been announced by Allis-Chalmers Manufacturing Company, 974 S. 70 Street, Milwaukee, Wis.

The top and bottom shells are cast steel for shock resistance, weldability, and economy. They are reinforced with horizontal annular ribs for protection against cracking. A large cast-steel spider permits the forged steel main shaft to be raised as wear progresses on the manganese steel mantle and concaves. The



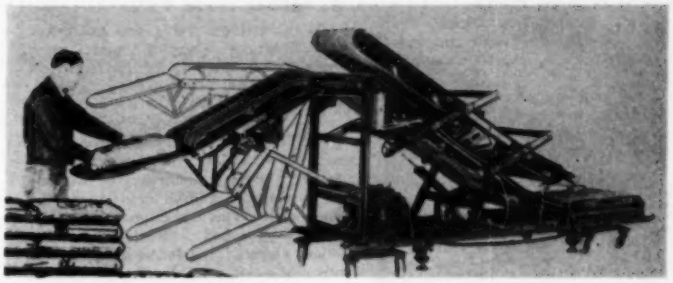
straight down discharge has made possible the shortening of the bottom shell with a corresponding weight reduction, and elimination of the diaphragm and liners permits flexibility of installation and prevents packing of sticky materials. Improved bearings and oiling system add to the life of the machine. Heavy-duty and standard primaries and high capacity secondary crushers are included in the line of eleven sizes.

● Aluminum Lift Truck



A lift truck made of aluminum and designed to turn on a very short radius is offered by the Market Forge Company, Everett, Mass.

The truck is supported on two front wheels and two auxiliary wheels when the forks are down. The rear wheels are retracted 1 in. above the floor. This makes short radius turning possible and aids in entering pallets. When the forks are raised, the auxiliary wheels are raised and the rear wheels lowered. The rear wheels are tandem articulated for ease of operation over floor inequalities and obstructions.



● Bag Flattener and Loader

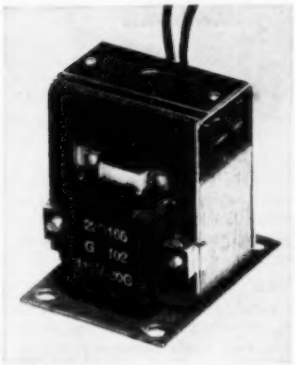
A power-driven bag flattener designed for use as a pallet loader is being made by Flexoveyor Manufacturing Company, 1220 South Acoma Street, Denver 10, Colo. A series of endless steel coil springs running over grooved steel rollers forms the conveying medium. A tension spring and a rocker arm connection between the upper and lower conveyors applies a kneading and pressing action to the bag, which eliminates air and distributes the contents evenly, producing a flat bag which piles better and saves as much as 30 percent in space.

The discharge conveyor section is controlled by a hydraulic ram so that bags can be piled on pallets and follow the height of the tier. Less labor is required and a more stable load is formed.

● Long-Life Solenoid

The Controls Division of General Electric Company has developed a short-stroke, heavy-duty solenoid designed for exceptionally long life.

The new solenoid is the push type, with maximum stroke of 5/16 in. The push pin is stainless steel brazed to the plunger. A baked permafil coil assembly is moisture-, oil-, shock-, and vibration-resistant. The solenoid is available in four models for industrial application.



● Toothed Belt

A toothed rubber or fabric belt, which is claimed to be an outstanding advance in power transmission has been put on the market by the L. H. Gilmer division of the United States Rubber Company, New York 20, N. Y., as the Gilmer timing belt.

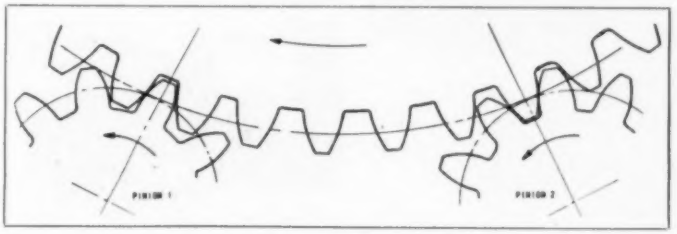
The belt, a non-slip power drive, is said to permit perfect synchronization. It is shaped like the conventional flat belt but has evenly-spaced teeth along the inner surface that engage in corresponding grooves in the pulley. It can be made in any desired size and in a variety of materials to suit many applications. It has been used successfully on heavy loads at 10,000 r.p.m. running over a ½-in. diameter pulley.

The company plans to market a series of standardized stock drives in heavy- and light-duty constructions with a number of pulleys to provide for adequate speed ratios.

● Rotary Kiln Drive

Allis-Chalmers rotary kilns are now being supplied with "Duo-Tork" drives where the power requirement is 150 hp. or more.

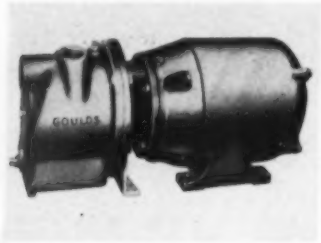
The Duo-Tork drive features staggered dual pinions which incorporate the new 20-deg. involute gear tooth. The new drive is claimed to reduce tooth pressure by one-half and give twice as many tooth contacts per revolution. This reduces vibration and permits better lubrication, resulting in less wear. Greater flexibility in the arrangement of the drive and the use of standard elements and flexible couplings are additional features. Allis-Chalmers, Milwaukee, Wis.



● Self-Priming Pump

Goulds Pumps, Inc., Seneca Falls, N. Y., announced recently an unusual new line of self-priming centrifugal pumps.

These pumps feature advantages in self-priming applications since, for example, all valves are eliminated by the unusual design. Other points cited by the



manufacturers include efficiencies comparable to standard centrifugal pumps; the absence of large and bulky priming reservoir; and elimination of water recirculation during the pumping stage.

The self-primers are made in sizes from ¼ hp. to 5 hp., with open and closed impellers, capacities to 120 g.p.m. heads to 135 ft., depending on capacity, and suction lifts up to 25 ft.

● Hydraulic Powered Loader

A wheel tractor loader featuring a hydraulic torque converter drive and a new design of clutch type transmission is being manufactured by the Tractomotive Corporation, Deerfield, Ill., as the "TL-10 Tracto-Loader."

A single-stage torque converter furnishes power in a smooth, constant flow which makes possible loading in higher gear and avoids slipping of the drive wheels. A clutch-type transmission reduces most gear shifting. Two multiple-disc clutches are built into the transmission. One is for forward motion while the other is for reverse. Only one clutch can

be engaged at a time; changing from one direction to the other is accomplished by merely pushing one lever. There are four forward or reverse speed ranges.

The machine has a ¾-cu. yd. bucket mounted over the drive wheels. It is powered by an Allis-Chalmers gasoline engine.

● Rubber Lined Valve

A rubber-lined valve for emergency shut-off service in gas or liquid lines is being manufactured by R-S Products Corporation, 4600 Germantown Avenue, Philadelphia 44, Pa.

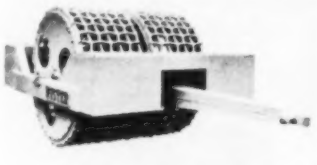
The valve is cast-iron and rubber seated. With the angular seating vane for wedge-type closure, the rubber is compressed around the periphery of the vane to give positive shut-off even around the shaft bosses. This makes possible the use of a cast-iron body valve in service that would normally call for stainless steel or other alloy. The rubber flanges replace the usual flange gaskets.

The valve is operated by a direct-connected motor-driven pump. Hydraulic pressure raises a counterweight for opening the valve. When it is open, the motor is cut off by a switch. When the current fails, the hydraulic pressure is released and the counterweight drops and closes the valve. Sizes range from 2 to 72 in.

● Salvage Roller

A roller for salvage operations on bituminous pavements is being manufactured by the Hyster Company, Portland 8, Ore., under the name of "Grid Roller".

The roller consists of weight boxes, tow bar, and other parts as in conventional rollers, but the tire is composed of interwoven steel bars to form a grid. The



weight on the bars causes the roller, it is said, to break up the compact bituminous pavements much more efficiently than the sheepsfoot roller, as there is no kick-up. The paving material cannot shift, as the crossed bars hold it in place.

● New Truck Models

Increased power, new styling, better brakes, improved steering, more driver comfort, and newly designed shock absorbers are some of the 50-odd new features in the "B-3 Series" of Dodge "job-rated" trucks made by the Dodge Division, Chrysler Corporation, Detroit 31, Mich.

Among the other features claimed for the new models are higher governor settings, redesigned fuel pumps, "hotter" spark plugs with moisture proofing, larger-capacity generators, more efficient cooling system, and increased engine power in some sizes.

● Gear Motors

The apparatus department of the General Electric Co., Schenectady, N. Y., has announced that G-E gear-motors in 1- to 50-hp. sizes are now available with "Tri-Clad" motors. A great number of speeds between 780 and 5.7 r.p.m. are obtainable in all standard ratings—polyphase, single phase, or direct current.

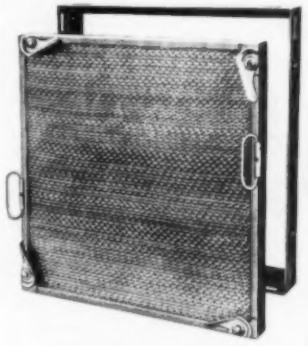
Long recognized for their convenience, trouble-free operation, and neat installation characteristics, gear motors have a higher operating efficiency than any other type of low-speed drive of comparable installation cost.

The now available Tri-Clad construction in the G-E gear motor series affords extra protection, due to the cast-iron

frame, end shield, and gear housing, against accidental blows and dripping liquids. Electrical breakdown is averted by stator windings of "Formex" wire, giving extra resistance to moisture, oil, and heat aging. In addition to these advantages, cited by G-E, operating wear and tear is lessened through the use of a cast-iron ball-bearing housing and long, close-fitting running seals to exclude dirt, dust, water, etc.

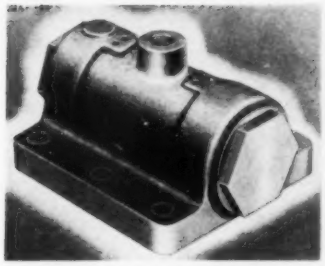
● High-Velocity Air Filter

A high-velocity air filter that consists of corrugated strips of fine mesh wire with the corrugations tapering so that a series of pyramidal pockets are created,



is being manufactured by the American Air Filter Company, Louisville, Ky.

The filter is designed to operate at velocities up to 500 f.p.m. and to clean effectively over a wide velocity range. They are easily cleaned by washing and coating with a filter adhesive.



● Cradle-Mounted Vibrator

The "Series No. 82" pneumatic vibrator of SPO Incorporated, 6548 Grand Division Avenue, Cleveland 25, O., features a one-piece cast-steel body of cradle design for permanent mounting on hoppers, bins, screens, and other places where vibration parallel with or at right angles to the flow of material is desired.

A bronze alloy cylinder liner prevents corrosion and resists wear. Varying the line pressure controls the speed of the vibrator. Hex ends provide ready access for servicing when necessary. Valves and lubricators are available if needed.

● Power Floor Sweeper

A power floor sweeper that combines rotating brush and vacuum action is being made by the G. H. Tennant Company, 2530 North 2nd Street, Minneapolis 11, Minn.

The machine is driven by a 6-hp. gasoline motor, and has a 36-in. rotating brush that operates in a vacuum-equipped compartment. The brush throws heavier dust forward into a hopper, while the lighter dust is picked up by the vacuum and discharged into a heavy fabric bag. The machine has forward and reverse gears, brakes, starter, horn, and other accessories.

Savings in reclaimed cement dust are said to have more than offset the cost of operating the machine in cement mills. Improved cleanliness, and a considerable saving over other methods of sweeping are claimed.

● Large Tractor Shovel

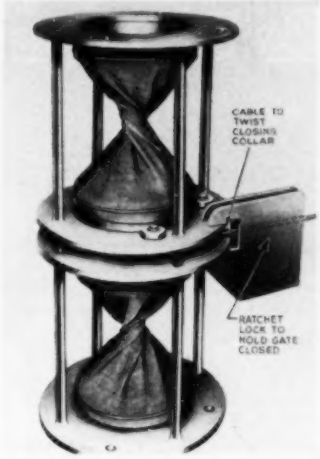
A new "Payloader" tractor shovel of 1¼-cu. yd. bucket capacity is the newest addition to the line of the Frank G.

Hough Company, 750 Seventh Street, Libertyville, Ill.

The machine is powered by a 60-hp. gasoline or diesel engine. Lifting and bucket control are hydraulic. A full-reversing transmission provides four speeds in either direction up to 29 m.p.h. The dumping clearance is over 8 ft., making it useful for loading trucks.

● Twisting Valve Closure

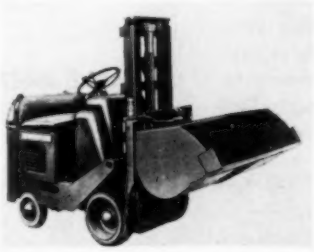
The "Twistite" double closure bin valve manufactured by the Stephens-Adamson Manufacturing Company, Aurora, Ill., consists of two flexible rubber sleeves joined by a rotating steel collar. A cable rotates the collar, causing the sleeves to twist and seal the opening. The sleeves automatically open when the pull



is released. Hand or motor control and locking devices can be supplied. This closure is said to work equally well with dust or with lumps, as the rubber sleeves are adjustable to differences in material sizes.

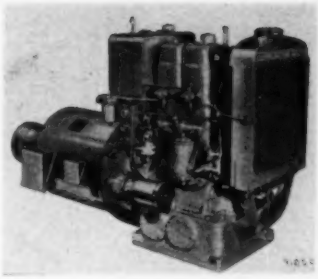
● Hydraulic Scoop Accessory

A hydraulic scoop accessory developed by Towmotor Corporation, Cleveland, O., picks up, transports, and dumps bulk



materials such as sand, cement, coal, and many other similar items. A powerful, two-way hydraulic cylinder, gives positive, finger-tip control of the angle of the scoop; with the lift truck's mast in vertical position, the hydraulic scoop will tip 45 degrees forward for dumping the load and 30 degrees backward for carrying the load.

Quickly detachable couplings in the hydraulic lines leading to the scoop and simplified suspension from the fork support shaft make the accessory readily interchangeable with standard pallet forks.



● Two-Cylinder Diesel Engines

A two-cylinder diesel engine, the "4FS2", has been announced by the Nordberg Manufacturing Company, Milwaukee 7, Wis. It is a four-cycle, mechanical injection, heavy-duty type developing 20 to 30 hp., with speeds of 1,200 to 1,800 r.p.m. It is a ready-to-operate complete unit and may be obtained with clutch or stub shaft for power applications or direct-coupled to a generator or pumping unit.

Generator units can supply power for shovels, cranes, magnets, and sand-and-gravel plants while the pumping units can handle applications in washing, draining, and dredging operations.

● Tractor-Drawn Scraper

The Wooldridge Model "TC-170" tractor-drawn scraper has a capacity of 17 cu. yds. struck and 20 cu. yds. heaped.

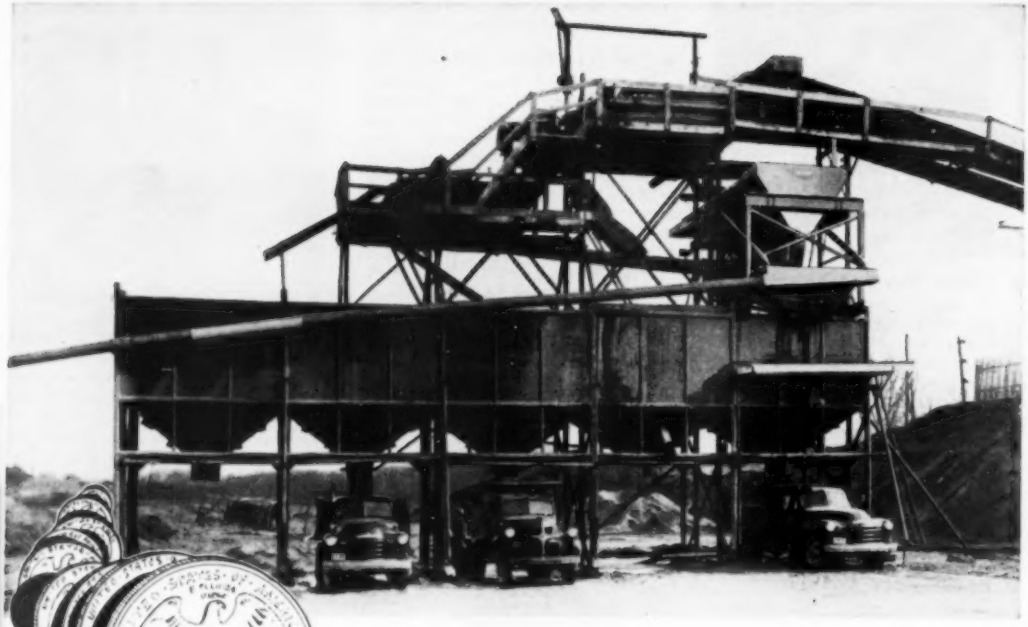
A curved ejector and a 65-in. apron opening provide faster discharge. The machine is of formed steel construction.

Rear-draft fulcrum leverage and boiling bowl action increase loading speed. This model has increased ground clearance, and redesigned cable arrangement which gives great maneuverability and ease of control according to the manufacturer, the Wooldridge Manufacturing Company, Sunnyvale, Calif.

● Arc Welder

The Lincoln Electric Company, Cleveland, O., is offering an improved model the "Shield-Arc" SAE Type S-7078 of 300 amps. and Type S-7066 of 400 amps.

These welders are designed for heavy-duty use in the repair and maintenance of equipment in the construction, quarrying, mining, and structural fields. Powered by a Hercules 6-cylinder gasoline engine, they are available as steel channel-mounted units or with pneumatic tires.



Ever hear Eagles Sing?

IT SOUNDS like a cash register symphony. A couple of Eagles are singing at the plant of Quillin Bros., Lodi, Ohio, shown here. Material from the bottom deck of screen is chuted to an Eagle Water Scalping Tank which concentrates solids and scalps off excess water. The concentrated material is bled to an Eagle Washer - Classifier - Dehydrator, directly below. Adjustable U-shaped weirs enables Quillin Bros. to retain the mesh they want when they want it. Any contamination in sand is washed away. Material goes to bins with excess moisture removed. Cost per yard for processing this premium material is figured in cents. If your profit picture isn't what it should be let Eagles sing for you! Ask for Catalog 47 — Washers, and Bulletin 150 — Water Scalping Tanks.

EAGLE BREAKER BALLS — handy around the quarry or pit

Made of a tough, special, semi-steel. For breaking man-size rock down to crusher size, knocking down banks, breaking up scrap or concrete. Replaceable hooks. Four standard sizes: 1500 lb., 2000 lb., 3000 lb., 4000 lb. Also special sizes. Ask for Bulletin 950.

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trade notes

J. E. Carroll

John E. Carroll, general sales manager of the American Hoist and Derrick Company, St. Paul 1, Minn., was elected vice-president of sales in recent action of the board of directors.

Mr. Carroll was for several years a district representative for American Hoist and Derrick, traveling in Western and Southwestern areas. More recently he had been a partner in the firm of Harron, Rickard & McCone, but he rejoined American Hoist in 1949.

The Link-Belt Company's new 1,296-page catalog contains 1,673 tables and charts of basic data which greatly simplify the problems of designing all kinds of conveyor systems, mechanical power transmission, and many different types of processing machinery.

Copies of the book, which has been three years in preparation, are being distributed as rapidly as possible to industrial and engineering firms, engineering schools, and libraries. All available copies are being used to supply engineers, estimators, and purchasing executives.

A primary function of the book, which is identified as *Link-Belt General Catalog 900*, is service as a reference tool. It presents basic engineering data facilitating the selection of chains and wheels, drives, power transmission elements, conveyors, and process machines in the combinations which will best satisfy a wide range of functional requirements and operating conditions.

David S. Gibson has been appointed assistant to the vice-president, purchases and traffic, of Worthington Pump and Machinery Corporation, Harrison, N. J. During World War II Mr. Gibson was manager of the corporation's priorities division and later executive secretary of the contract termination committee. Since then he has handled various assignments in the general sales department, as well as studies of general operating procedures.

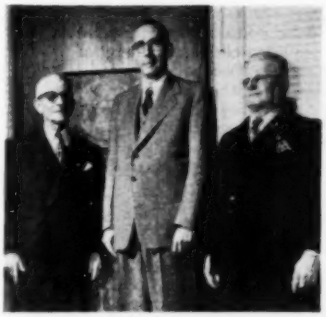
Sale of the plant and equipment of National Transit Pump and Machine Corporation was completed recently at Oil City, Pa., as Worthington Pump and Machinery Corporation took possession of its facilities.

Overflow from Worthington's other factories will be diverted here, according to Austin C. Ross, vice-president in charge of Worthington's Buffalo plant, who will also have administrative charge of the plant at Oil City. William F. Weinreich, formerly assistant superintendent of Worthington's Buffalo machine shops, will be in charge at Oil City as assistant to the vice-president. Worthington plans to continue to furnish repair and spare parts for the products of National Transit Pump and Machine Company now in the field.

Officials of the Baldwin-Lima-Hamilton Corporation, Lima, O., have announced the appointment of Henry Barnhart as general manager of the Lima plant and J. F. Connaughton as assistant general manager. Mr. Barnhart, also a vice president of the corporation has been connected with Baldwin-Lima-Hamilton Corporation and predecessor companies since 1928. Mr. Connaughton, also special assistant to Mr. Rentschler, has been with the corporation since 1928.

C. B. Smythe, president of The Thew Shovel Company, Lorain, O., was recently given a diamond in recognition of his 40 years of service with the company. At the ceremony two other Thew employees, R. P. Kelly, service manager, and E. R. Linn, machinist, were given 40-year awards. This was the first time that more than one award has been made in a given year.

Mr. Smythe was the second member of his family to receive the award. His father, who preceded him as president, was the first employee to receive a 40-year award from the company.



• Messrs. Smythe, Kelley, and Linn at Thew ceremony.

Promotion of A. K. Tice to assistant to the vice-president in charge of sales of Fruehauf Trailer Company was announced recently. Mr. Tice had been manager of the Sacramento, Calif., branch until he returned to Detroit.

Frank R. Hunter has been named manager of a new branch office of Allis-Chalmers' general machinery division in Wichita, Kans. Mr. Hunter has been a sales representative in the company's Kansas City district office since 1942. The new office is being operated as a branch of the Kansas City district office.

LYON-Raymond Corporation, Greene, N. Y., has appointed W. M. Anderson as their new district sales representative for the states of North and South Carolina. Mr. Anderson will operate from his headquarters at 716 East Kingston Avenue, Charlotte, N. C. He will promote the sale of the complete LYON-Raymond line, their regular Hydraulic Lift Division and the New SpaceMaker Electric Tiering Truck.

W. G. Everhart has been appointed manager of the Philadelphia branch of L. B. Smith, Inc., Camp Hill, Pa. The company is a distributor of construction equipment and trucks.

George R. Fox, director of purchases, was promoted to the post of assistant vice-president in charge of plant expansion and Frederick W. Thomas was appointed director of purchases, according to an announcement from the Joy Manufacturing Company, Pittsburgh 22, Pa.

Officials of R. G. LeTourneau, Inc., Peoria, Ill., have announced the appointment of James W. O'Connor and J. W. Gulledge to the company's field engineering staff.

W. E. Miles, manager of the Industrial Division of The Oliver Corporation, was elected vice-president in charge of crawler tractor and industrial sales for the company.

Mr. Miles has been with the Oliver Corporation since 1919. He is vice-president of the Construction Industry Manufacturers Association, affiliated with the American Road Builders Association.

E. J. Seifert, president of Pettibone Mulliken Companies, recently announced the appointment of Phillip Levin as sales manager of the Bucket Division of George Haiss Manufacturing Company, subsidiary of Pettibone Mulliken Company.

The National Supply Company's Engine Division recently moved its Oakland, Calif., office to 2510 Grove Street. J. H. Czock is special representative and David Ury parts and service manager.

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YUBA stocks ARS plates in all usual thicknesses from ¼" up. Either flat or revolving screens with perforations to fit your exact needs can be manufactured quickly. You will get proper fit and fast installation because YUBA screens are rolled true, cut square to close limits. Holes are taper drilled; can be of small diameter and closely spaced for screening sands bearing monazite or other rare earths.

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CABLES: YUBAMAN, SAN FRANCISCO · SHAWDARBCO, LONDON

The San Francisco office of Hercules Powder Company has been moved to the Standard Oil Building, 225 Bush Street. The company's headquarters in San Francisco were formerly located at 256 Montgomery Street. The office handles sales of Hercules products in the Bay area.

Kenneth Ames

Caterpillar Tractor Company, Peoria, Ill., has created a new sales division, to be known as the "Plains Division," which will service some of the territory formerly handled by the Central Division.

Kenneth Ames, former head of sales training, will be sales manager of the new division. Lee Morgan and Gordon Fowler will become assistant sales managers. E. A. Tiarks will become assistant sales manager of the Western Division, and W. F. Jordan will be assistant sales manager of the Eastern Division.

Lee Morgan

E. A. Tiarks

The Jeffrey Manufacturing Company, Columbus, O., recently announced the following appointments: Russell W. Knode, formerly assistant export manager, has been named manager of the export department. He succeeds Robert A. Currie, who passed away last December. L. E. Bixby, an assistant in the contract department, has been elevated to manager of that division.

City Industrial Engine Sales, Inc., 2259 S. Indiana Avenue, Chicago, Ill., announces the opening of its sales parts and service distributor facilities on Chrysler and International gas and diesel industrial engines. Tom La Vorene is vice-president and general manager. George Clarke is service manager. Harry Groessman heads the parts department.

The business is devoted exclusively to industrial engines and parts, power units and allied items as used by the construction industry.

Appointment of Fred F. Welch of Portland, Ore., as manager of the Hyster Company's retail store in Seattle, Wash., was announced recently. Mr. Welch succeeds the late Vernon G. Lindenberg. He joined Hyster in 1948.

Link-Belt Company has announced that Maurice J. Erisman, chief engineer at the Los Angeles plant, has been appointed assistant chief engineer for the

M. J. Erisman

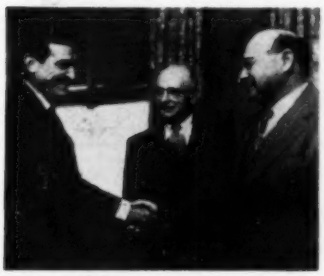
H. J. Foye

company's Pershing Road Chicago plant, with headquarters at 300 W. Pershing Road, Chicago. It was announced that Homer J. Foye, chief engineer at the Seattle plant, has been appointed chief engineer at Los Angeles, to succeed Mr. Erisman.

C. B. House Jr., and Lee J. Mohler have been appointed sales managers of two newly established product line sections in General Electric's Small and Medium Motor Divisions. They will head, respectively, the A-C Motor Section and the D-C Motor and Generator Section of the Lynn (Mass.) Motor Sales Division.

The appointment of T. R. Mangelsdorf as sales manager of the Omaha sales division, Bemis Bro. Bag Company was recently announced.

Mack Manufacturing Company, New York, and the Wooldridge Manufacturing Company, Sunnyvale, Calif., have negotiated an agreement for the latter company to assemble, partially produce,



•H. W. Dodge and P. J. Fleming, Mack executives, with H. Gusman, Wooldridge's president.

and distribute Mack off-highway vehicles in ten Western states.

The Wooldridge Company will expand its present facilities to take care of the Mack line in addition to its own line of contracting and earthmoving equipment.

The election of three executive vice-presidents, to fill newly-created General Electric posts with responsibilities as assigned by the president has been announced. Elected by the company's board of directors were Henry V. Erben, Hardage L. Andrews, and Roy W. Johnson. Their headquarters will be at the G-E executive offices in Schenectady.

SYNTRON

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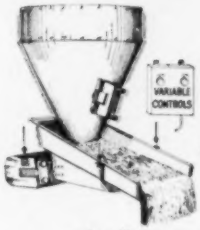

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—feeding most all types of bulk materials—fine, lumpy, abrasive—hot or cold—dry or damp—at variably controlled rates, from pounds to hundreds of tons per hour. To mixers, blenders, belts, crushers, screens, ovens, driers, packaging machines, etc. With exceptionally low maintenance costs due to absence of motors, pulleys, gears, cams, sprockets, chains and other wearing parts.

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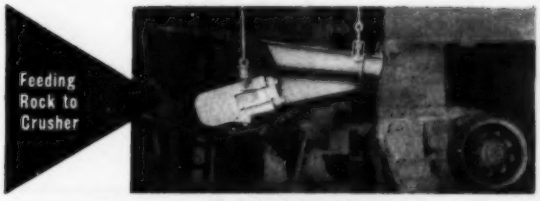

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Years of research and development by STEARNS engineers have produced an outstanding product in magnetic pulleys — the reason for the wide acceptance in all industries for removing tramp iron, for separation and reclamation of materials. For complete specifications and operating data, write for literature.

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ELECTRO AND PERMANENT MAGNETIC PULLEYS

STEARNS Electro-Magnetic Pulley

Stearns MAGNETIC MANUFACTURING CO.

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James F. Bishop, secretary-treasurer of the American Hoist and Derrick Company, St. Paul, Minn., was elected to the board of directors at a recent stockholders' meeting. A veteran of 28 years of service with American Hoist, he has been secretary-treasurer since 1945.

J. Mikulak

John Mikulak has been appointed assistant to L. C. Ricketts, vice-president in charge of manufacturing of Worthington Pump and Machinery Corporation, Harrison, N. J.

Mr. Mikulak was associated for some time with Worthington's subsidiary, the Electric Machinery Manufacturing Company, in Minneapolis. In 1944 he was employed by the American Car and Foundry Company, where he served successively as chief engineer of the welded products division and senior research engineer, specializing in the development of welded products and methods.

Announcement has been made of the appointment of Kenneth A. Hanan as sales representative in the New York City district office of Marion Power Shovel Company. Active in the sale of construction equipment in the New York area for the last 3 years, Mr. Hanan

K. A. Hannan

J. C. Priest

will cover northern New Jersey and a section of the New York Metropolitan district for Marion

At the same time the appointment of John C. Priest as sales representative in the Chicago district office was announced. Mr. Priest will work out of the Chicago district office.

Chester W. Schweers has been named director of sales of Allis-Chalmers General Machinery Division.

Mr. Schweers has been connected with the company's general machinery division sales organization for more than 20 years. He joined Allis-Chalmers in 1930 and is an electrical engineering graduate of Texas Agricultural and Mechanical Engineering College.

Merton M. York, manager of the Boston district office, has been named manager of the New England Region to succeed Mr. Schweers.

Joseph T. Ryerson & Son, Chicago, Ill., have announced an expansion program for their St. Louis plant, located at 5 Clinton Street. An additional warehouse of 50,000 sq. ft. will be built, and the present warehouse will be rebuilt to provide faster loading service. It is planned to install a number of new machines designed to speed up cutting and shipping steel.

Excavating and materials-handling equipment produced by Marion Power Shovel Company is now being distributed throughout Mexico by Ingenieria Mecanica y Electrica, S. A. With offices at Roma 35, Esq. Viena, Mexico City, the new distributor firm handles the entire Marion line.

West Coast Engine and Equipment Company, distributors of General Motors diesel engines to the construction, industrial, marine and petroleum fields in Northern California, will increase their sales and service facilities about April 1 when they move into their newly completed building in Albany, Calif. The new building is located on Eastshore Highway approximately one mile from the company's former headquarters in Berkeley, and has 15,000 sq. ft. of floor space.

personal mention

A. W. Fraser

A. William Fraser, formerly general European manager, has been appointed midwest sales manager of Worthington Pump and Machinery Corporation.

Mr. Fraser will direct the sales of Chicago, St. Paul, Kansas City, and St. Louis offices, making his headquarters in Chicago.

Mr. Fraser was first sales engineer in various Worthington offices and plants throughout the country. In 1937 he became Chicago district manager and in 1945 general European manager.

C. Arthur Johnson, superintendent of production, Crusher Division, Nordberg Manufacturing Company, Milwaukee, Wisc., died while on a visit to Mission, Tex., on February 18, 1951. He was 60 years of age.

The appointments of Worthington J. Gross as manager, governmental division at Washington, D. C., and Bert C. Landstrom as district representative for the seven Eastern states and the northeastern part of Canada, have been announced by Athey Products Corporation, Chicago, Ill.

W. J. Gross

B. C. Landstrom

Prior to his association with Athey Products Corporation, Mr. Gross was affiliated with Engineering & Research Corporation at Riverdale, Md., as assistant to the president in charge of government sales.

Mr. Landstrom has been associated with the heavy equipment industry for 13 years, as salesman, branch manager and sales manager of the Beckwith Machinery Company at Pittsburgh, Pa.

L. M. Cassidy

Leslie M. Cassidy was elected chairman of the board and chief executive officer of the Johns-Manville Corporation and Adrain R. Fisher was appointed president of the corporation at a special meeting of the board of directors.

Mr. Cassidy succeeds to the post left vacant by the death on February 26, 1951, of Lewis H. Brown, who had been chief executive officer of Johns-Manville since 1929, first as president and, from 1946, as chairman of the board. Mr. Fisher succeeds Mr. Cassidy, who became president of Johns-Manville Corporation on the retirement of R. W. Lea on January 31, 1951.

Clifford F. Rassweiler, vice-president for research and development, who was elected vice-chairman of the board and a director on January 31, 1951, continues in those duties and in addition will continue to have full responsibility for organization and direction of the company's new planning board, and will serve as assistant and alternate to the chairman.

Mr. Cassidy began his association with Johns-Manville in 1926 as architectural representative in northern New Jersey. Successively he became a sales supervisor, manager of the company's Newark sales office, assistant to the vice-president in charge of building material sales, general merchandise manager, and general manager of the building products department. In 1946 he was appointed vice-president for sales of Johns-Manville Corporation.

Mr. Cassidy has long been active in industry affairs. He is a past president of the National Mineral Wool Association, and of the Insulation Board Institute. He is president of the Marketing Executive Society of New York, chairman of the board of governors of the Asphalt Roof-

A. R. Fisher

C. F. Rassweiler

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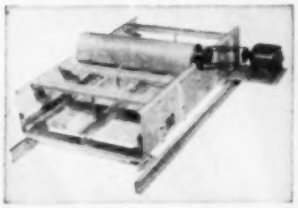
The 1950 UNIVERSAL is the Screen for your finer and more difficult—separations.



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- **Two-point suspension assures uniform distribution of vibration.**
- **No binding on this resilient, vertical-action vibrating Screen.**

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ing Industry Bureau and a member of the executive committee, Asbestos Cement Products Association.

Mr. Fisher joined Johns-Manville in 1923 as superintendent of the asphalt roofing department at the company's Waukegan, Ill., plant. Prior to that time he had been a superintendent with the Barber Asphalt Company of Perth Amboy, N. J., and a manager with the Stowell Manufacturing Company, Jersey City, N. J. Since joining Johns-Manville he has held executive positions at the company's Lompoc, Calif., and Manville, N. J., plants. In 1937 he was made production manager of Johns-Manville with offices in New York City, and in 1945 became a vice-president of Johns-Manville Corporation. He was named vice-president for production in 1946; and in January 31, 1951, he was elected a director and appointed vice-president in charge of all asbestos mining.

CEDRIC WILLSON, who for more than 20 years has been prominent in the portland cement industry, has been elected a vice-president of the Texas Lightweight Aggregate Company, Dallas, Tex. For the last two years Mr. Willson has been engaged in the lightweight aggregate production.

Officials of Broward Quarries, Inc., Ft. Lauderdale, Fla., recently announced three promotions: CHARLES F. DEAN is now general manager, and WALTER B. COLBY is assistant general manager.

At the same time WARREN MACGREGOR was promoted to the position of sales manager.

F. E. McCaslin

F. E. MCCASLIN, president of the Oregon Portland Cement Company, was recently re-elected president of the Portland, Oregon Community Chest.

Under his leadership, Oregon Portland Cement Company, one of the principal suppliers of cement in the Northwest, has actively supported civic improvements and undertakings as part of its program of developing sound community relations.

The following personnel promotions have been announced by Cris Dobbins, executive vice-president and general manager of Ideal Cement Company of Denver:

H. B. BOLTON, to Gulf regional sales manager; CHARLES L. HERBERT, to assistant to the Gulf regional sales manager; W. J. CONWAY, to sales manager of the Alabama division; and H. H. HOWLE, to assistant sales manager of the Alabama division.

AL WISE, associated with Azusa (Calif.) Rock & Sand Company, has been elected director of the Azusa Chamber of Commerce.

HARRIS N. SNYDER, vice-president of the Buffalo Slag Company, Inc., has been named to the National Association of Manufacturers' committee in cooperation with community leaders.

Appointment of C. J. LINE as director of research for the Peerless Cement Corporation of Detroit, Mich., was announced recently by W. C. Russell, president. Mr. Line has served as chief chemist at Peerless for the last five years.

At the annual stockholders' meeting of the Northwestern Portland Cement Company in Seattle, Wash., the following officers were re-elected: GORDON TONGUE, present; J. A. REUTER, vice-president; FRANK KIERNAN JR., vice-president; J. D. BURNS, chairman of the board; C. T. W. HOLLISTER, chairman of the executive committee; D. G. METCALF, secretary-treasurer; and H. JOHNSON, assistant secretary-treasurer.

Appointment of J. A. O'BRIEN, general manager of the Industrial Products Division, as one of three new vice-presidents of Johns-Manville Corporation, has been announced.

Mr. O'Brien joined Johns-Manville in 1915 in the company's sales promotion department. He later became a salesman, advancing to assistant manager of the oil industry department, Eastern Division manager of the industrial department, and sales manager of the power products and industrial department. He was made general manager of the Industrial Products Division in 1946.

The other vice-presidents of the parent corporation appointed were HAROLD R. BERLIN, general manager of the J-M Building Products Division, and A. S. ELSENBAST, general manager of the J-M Celite Division.

All were formerly vice-presidents of Johns-Manville Sales Corporation, a J-M subsidiary. In their capacities as vice-presidents of the parent organization, they will take an active part in the work of the new over-all company planning board, recently established by Johns-Manville.

The appointment of C. P. LINGLE as manager of The Celotex Corporation's Denver sales branch was announced recently. Mr. Lingle, formerly Celotex sales representative in the Seattle, Wash., area, succeeds E. P. LARSON, who is being transferred.

The appointment of PAUL G. R. ARMSTRONG as assistant manager of the Celotex Cleveland branch was also announced. Prior to his appointment, Mr. Armstrong was a sales representative in the company's Minneapolis branch.

MELVIN H. BAKER, president of National Gypsum Company, has been appointed by New York's Governor Dewey as a member of the state legislature commission which is studying the feasibility of creating a Buffalo Port Authority.

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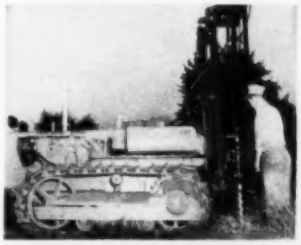
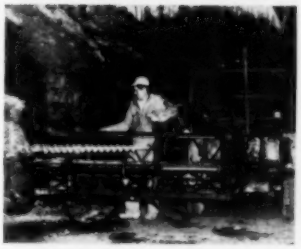
designed for Prospecting, Sampling and Testing





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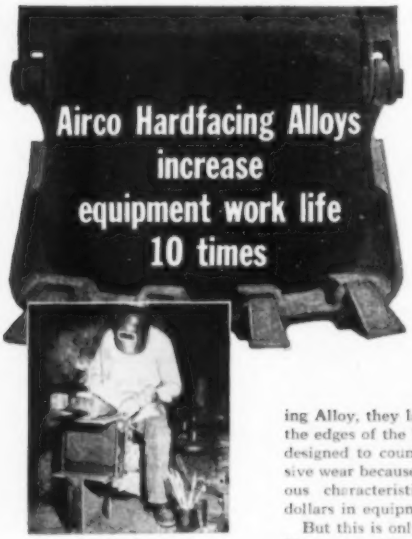
obituaries

SIR PERCY MALCOLM STEWART, who retired last year as chairman of the London Brick Co., Ltd., one of the largest brickmaking companies in the world, died recently at his home in Sandy, England, after an illness of six months. He was 78 years of age.

Sir Malcolm started in the brick and cement industry business 50 years ago and rose rapidly through the managerial ranks until he, as head of the Blue Circle group, was able to guide it into controlling 70 percent of the brick and cement production in England.



Worn machinery and equipment need no longer mean costly replacements. Today, surfaces rebuilt with Airco Hardfacing Alloys add many months to equipment life and, in many cases, improve the operating characteristics.

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But this is only one of the many Airco Hardfacing Alloys used in their welding shop to save time, trouble and money. They follow a conscientious program of hardfacing . . . a program that helps prolong equipment work life and prevents costly "down-time."

You, too, can enjoy these same time and money savings. Your nearby Airco office will gladly show you how these cost-saving Airco Hardfacing Alloys will help you with your particular problem. Write today.

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REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
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Offices in Principal Cities

J. SENNOTT ORR, sales manager of the Northwest Pioneer Division of the Flintkote Company, died on March 17 at a hospital in Portland, Ore., after an extended illness. He was 56 years of age. Before going to Portland, Mr. Orr had been sales manager for Flintkote at Spokane, Wash., and Alameda, Calif.

OTIS WACK, 70, vice-president in charge of engineering for the United States Gypsum Company, died on February 21 in North Hollywood, Calif., at the home of a daughter. Mr. Wack joined the J. B. King Gypsum Company in 1913. In 1923 this firm merged with the United States Gypsum Company.

WILLIAM F. CAREY, internationally known engineer and industrialist, and a director of the Lone Star Cement Corporation, died on February 23 at his ranch near Indio, Calif. He was New York's sanitation commissioner from 1936 to 1945.

JOSEPH E. BARELA, district sales manager for the Pennsylvania Dixie Cement Company in Atlanta, Ga., died recently at his home there at the age of 62 years.

RUTHERFORD SNOW WILSON SR., executive director of Big Rock Stone and Material Division of the Minnesota Mining and Manufacturing Company, died on February 6 in Little Rock, Ark. Mr. Wilson, who entered the contracting business in Little Rock several years before purchasing an interest in the Big Rock Stone and Material Company, was president of that company for 23 years prior to its sale last summer to the Three-M company. He was 74 years of age.

LUCIEN T. MCDONALD, general manager of Powell Lime & Cement Company, Memphis, Tenn., died of a heart ailment on February 3 at his home in Memphis. He was 75 years of age. Mr. McDonald had been actively associated with Powell Lime & Cement for some 30 years.

WILLIS MOTT MOORE, retired president and owner of the New York Slate Works, died on February 19 at his home in Brooklyn, N. Y.

WILLIAM POPE ANDERSON, former president of the American Concrete Institute and a founder and past president of the Ferro Concrete Construction Company, died in Cincinnati on February 26, at the age of 76. Mr. Anderson was known internationally as a pioneer in the field of reinforced concrete construction.

EUGENE SOMERS, 64, a civil engineer with the Universal Atlas Cement Company of New York, died on February 25 after a brief illness.

E. B. EMORY, who had been on The Warner Company sales force since 1915, unexpectedly died at his home in Chestertown, Md., on December 26, 1950. When he joined the firm, his work was to assist in introducing its new product, Limoid. Since 1925 he had been in charge of Eastern lime sales.

THOMAS FILICH, 64, former owner of the Valley Washed Sand & Gravel Corporation of Waukesha, Wis., died recently at his home in Milwaukee. Mr. Filich was born in Austria and came to Milwaukee about 40 years ago. He died after a long illness.

JOHN P. SANGER, vice-president and director of purchases for the United States Gypsum Company, died on February 10 at his home in Evanston, Ill. He was 50 years of age.

Mr. Sanger was a past president of the Purchasing Agents Association of Chicago. During World War II he served with the Office of Production Management. He was also an active member of the Hoover Commission.

HORACE H. HELLER, SR., a veteran in the cement industry, died recently at Easton, Pa., at the age of 70 years. Mr. Heller was superintendent of the Bath, Pa., mills of the Bath Portland Cement Company when that firm was purchased by the Lehigh Portland Cement Company in 1925. He continued in that post until 1935, when the Bath plant was shut down and he was transferred to the Sandt's Eddy plant. Mr. Heller was assistant superintendent at Sandt's Eddy until his retirement in November, 1947.

ABRAHAM L. CLARK, former head of the A. L. Clark Stone Company, died February 12 at his home in Elizabeth, N. J., after a brief illness. He was 86 years of age.

FRANK J. HAWKINS, manager of the Newburgh Sand and Gravel Company, Newburgh, N. Y., died of a heart attack while at his office on February 3. He was 58 years of age.

Indianapolis, Ind., firemen recently battled flames for 11 hours at the tipple of the American Aggregates Corporation's gravel plant in that city, but the blaze damaged the facilities to the extent of $150,000. According to Neill R. Garrison, superintendent, the fire destroyed expensive electrical equipment. He added that the tipple would probably be out of commission for four months.

An administration bill proposing the imposition of a $1,500,000-a-year severance tax on mineral deposits and forest products was withdrawn from the Tennessee Legislature as a result of stiff opposition.

Four large deposits of asbestos ore have been discovered in central Serbia. One of the deposits extends nearly 7 miles and contains long-fiber asbestos similar in quality to the Canadian variety.

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Recently during the writer's personal contact with readers of PIT AND QUARRY several legal questions, having special interest to executives and managers and employees, have been presented. The most important of these questions, and those submitted by readers during the year 1950 via mail, have been selected

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LODOVER crowds into and loads material — Backs straight out — bucket moves overhead at controlled speed — Stays level — in back position bucket turns over completely as operator dumps load — Bucket returns to digging position as LODOVER moves forward . . . Complete overhead cycle takes only 20 seconds.

1 yard Combination Overhead and Front End Shovel for INTERNATIONAL TRACTORS

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. . . Stone, sand and gravel operators find LODOVER overhead loading eliminates 2 turns — saves 15 seconds in every cycle. Seconds saved add up to 50% more yardage per day.

. . . Add big extra yardage to reduced tractor maintenance — both due to "no-turn" operation — that's why LODOVER turns out more work at lower cost *with more profit* on all pit and quarry operations!

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as a basis for this article. Leading higher court citations verify answers and are included in the opinions in order that readers may make a record of them for future reference.

City Fails to Pay for Materials

Question: "Can a city refuse to pay for cement, sand, and gravel which it used in making its streets? I have a suit against a city which refused to pay for materials it used on the excuse that the city official who purchased the material from me was not authorized to make purchases. Can the city council ratify this contract and pay me for the materials?"

Answer: Generally speaking, the courts hold cities liable on written contracts for sale of nonmetallic products made by persons *having proper authority*, although the contract has defects such as incorrect price, date, form, quantity, or quality of merchandise. These decisions are based upon the legal rule that a municipality may ratify and be liable on a valid contract which is not absolutely void. However, it is important to know that if a contract for *any* reason, is void when signed, it cannot be ratified by a city although its officials use the merchandise. These important points of the law were thoroughly discussed in the recent case of *Mfg. Co. v. City of Portageville*, 28 S.W. (2d) 119.

The facts of this case are that a state law was passed by which the city board of aldermen has power to purchase merchandise, materials, etc.

One day the board of aldermen of the city was not in session, but the mayor of the city told two members of the board to purchase certain material for the city. A written contract was drawn up and signed by the two aldermen, who had no authority to make valid contracts when not in session with other aldermen. The material was delivered to the city, retained, and used by it. The bill was not paid, and the seller sued the city to recover the amount due. The seller argued that the city was liable for payment because it appropriated and used the material for its benefit.

However, since the original sales contract was void, the court held the city not liable on the contract stating the following important law:

"In any event, the contract to purchase the material was void when made because executed on the part of the city without authority, and, being void, could not be ratified. A contract by a city made *with authority*, but lacking in some way in its execution, may be ratified .... But a contract correct in form, but void for want of power to execute it, cannot be ratified .... The city had no power to make a contract to pay for something that was done before the contract was executed, and, since this contract was void when made, there was nothing to ratify."

Payment on Measurements

Question: "When a contractor sells rock at a stipulated price per yard can he receive payment based either on the number of loads, or measurement of the material after delivery?"

Answer: The contractor must comply with the terms of the original contract, as to method of measurements and payments. Generally speaking, if a contractor contends that a contract should be construed according to unusual rules, or different from the ordinary meaning of the law, he is bound to prove his assertions. If he fails to do so, the court will interpret the contract to mean that which would have been "intended" by ordinarily prudent and reasonable persons.

For illustration, in *Ricci v. McGovern*, 149 Atl. 860, it was disclosed that a quarry furnished a contractor with a large quantity of stone which was used as riprap on a municipal causeway. It was agreed that the quarry should be paid a stipulated price per cubic yard for wall stone and a higher price per cubic yard for quarry stone. A dispute arose as to the method by which the yardage of the stone was to be determined. The quarry owner claimed that it was to be determined by measuring the stone after it had been placed in position on the slope of the causeway, and the contractor contended that the yardage was to be determined by keeping account of the number of truck loads, on the basis of three cubic yards of stone to each load.

In subsequent litigation, the contractor testified that many of the larger stones were purposely broken to small pieces by the quarry's employees while being placed on the slope of the causeway, and that this breakage increased the yardage of the stone about 20 percent more than it was when the stone was on the trucks.

Since the quarry owner failed to prove that the original agreement provided that

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payment should be based upon measurement on the causeway, and also since it was shown that he had accepted a $10,003 payment based on the price per load, the higher court held the contractor entitled to pay for the stone on the basis of three cubic yards to each motor truck load.

Hence, one who demands payment for stone or other material on a higher than usual customary basis, must prove his contentions; otherwise he cannot expect a favorable verdict.

Sells to Subcontractor

Question: "Assume that a general contractor contracts to construct a building for a property owner. If a materials man sells materials to a subcontractor who becomes insolvent, or fails to pay, can the former have a lien on the building to secure payment or must he look to the subcontractor for payment?

Answer: The law is well established that compliance by a materials man to a state mechanics lien law entitles him to a lien to secure payment for materials used by a general contractor and all subcontractors.

For illustration, in *Stanfill v. Penniman Gravel and Material Company*, 27 S.W. (2d) 135, it was shown that a property owner contracted with a general contractor for the erection of a building. The general contractor made a subcontract with a subcontractor by which the latter agreed to do the concrete work on the building. The subcontractor purchased from the Penniman Gravel and Material Company materials which were used in performance of this subcontract. The subcontractor became insolvent and did not pay for materials purchased from the sand-and-gravel company. The latter gave written notice to the building owner of its claims and filed with its county clerk affidavits asserting its liens, in compliance with the state statutes. It was found that the building owner owed the general contractor $696, and the general contractor owed the subcontractor the same amount.

The building owner paid the general contractor $696 and litigation developed over the question whether the sand-and-gravel company, which the subcontractor owed, was entitled to a lien on the building, or whether he was compelled to look to the general contractor for payment. In holding the sand-and-gravel company was entitled to either a lien on the building or payment from the general contractor, the higher court said:

"The defendants (sand-and-gravel company) having complied with the statutory requirements in respect to the fixing of their materials man's lien on the property, they became entitled to the sum due to the extent of the respective claims for material furnished to the subcontractor .... The statutes, when complied with, have substantially the same effect as a transfer of the obligation of the owner by the contractor to the materials man to the extent required to pay the account for the material."

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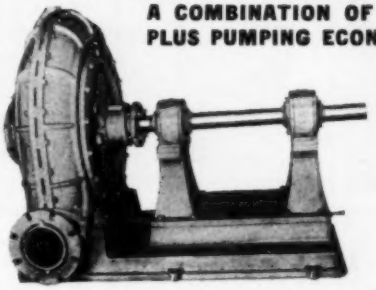

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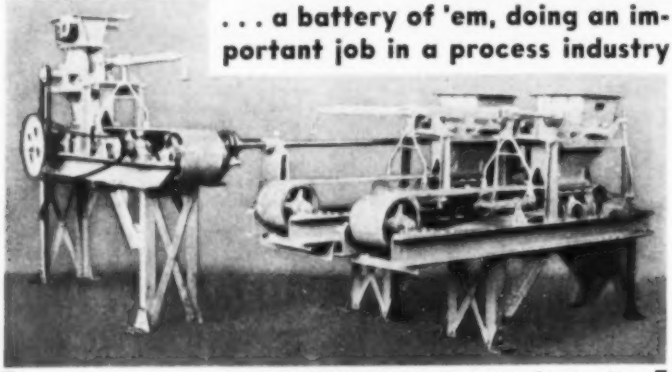

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titles either the buyer to rescind, change, or vary the contract, he is obligated to fulfill its exact terms or pay the seller damages, notwithstanding unforeseen circumstances.

For instance, in *Myers v. Hager*, 98 S.W. (2d) 36, it was disclosed that a buyer and a seller entered into a written contract by the terms of which the seller agreed to crush and deliver into bins approximately 2,700 cu. yds., of crushed limestone, meeting the state highway specifications for coarse aggregate on a federal highway project and for which the purchaser agreed to pay a stipulated price per cubic yard. The purchaser further agreed to buy all fine aggregate which accumulated in the bins. Soon afterward a federal engineer informed the buyer and seller that new federal requirements would "prohibit" the use of limestone screenings on the job, and for that reason the purchaser could not use any more limestone screenings. The legal question presented the court was whether the new federal ruling relieved the purchaser from paying the seller for the fine aggregate mentioned in the contract.

In holding that the purchaser was bound to accept and pay for all of the materials, the court said that a purchaser cannot avoid fulfilling the terms of a contract irrespective of conditions which make it impossible for him to use the purchased materials.

Mortgage vs. Lien

Question: "Please explain the legal difference between a conditional contract of sale, a chattel mortgage, and a lien."

Answer: In a leading case (141 Atl. 880) the court explained in detail the distinction between a sale and a mortgage as follows:

"The distinction between a conditional contract of sale and a mortgage is that a sale is a transfer of the absolute title for a price, whereas a mortgage is a conveyance of property *as security* for the payment of a debt, subject to the condition that the title shall revert to the person giving the mortgage."

Hence, a transaction is a mortgage if it is intended to *secure* an existing indebtedness. However, it is a conditional contract of sale if the debt is extinguished, or if the money advanced is *not* a loan, particularly if the one who receives it has the privilege of refunding the money if he chooses, and thereby entitling himself to recover possession of the property. A lien is "in legal effect" a mortgage.

Pedestrian Injured

Question: "If a contractor's employees use care and place lighted lanterns on a sidewalk or street barrier which warn pedestrians of an excavation, is the contractor liable in damages for injuries sustained by a pedestrian who could not see the excavation because unknown persons stole the lanterns?"

Answer: According to a recent higher court, the answer is yes, if the testimony shows that the contractor violated a city ordinance.

For example, in *Bertolozzi v. Progressive Company*, 212 Pac. (2d) 910, it

was shown that a city ordinance provides that everyone who performs work dangerous to pedestrians must erect and maintain a substantial barrier, and that they *must place reflectors* on the barrier.

One night a pedestrian sustained serious injuries when he fell through a framework of boards placed around an excavation on a sidewalk. The contractor proved that his employees had placed lighted lanterns on the barrier, and that someone had stolen the lanterns. However, since the contractor had not placed reflectors on the barrier, the higher court held the contractor liable in damages to the pedestrian.

Therefore, this contractor was held liable in damages to the pedestrian because he failed to place reflectors on the barrier. If he had placed the reflectors, as required by law, and they had been stolen by unknown parties, the contractor would have been held *not* liable by the court.

Subcontractor Must Pay

Question: "Suppose a subcontractor gives to a materials man an order on a general contractor for money the former owes for materials used on a job. If the materials man accepts this order, is the subcontractor relieved from payment if the general contractor becomes insolvent?"

According to a late higher court decision, the answer is no. Ordinarily, a subcontractor is bound to pay for all materials which he purchases from a materials man, unless the evidence clearly indicates that payment was not expected from the subcontractor by the seller when the sale was made.

For example, in *Carolina-Portland Cement Company v. Calhoun*, 155 S.E. 151, it was disclosed that a subcontractor named Calhoun purchased cement under a contract of sale which contained this clause:

"All the above material to be paid for as Calhoun, (subcontractor) receives his check from Joseph W. Stout Company (general contractor)."

The subcontractor did not receive payment from the general contractor, but he gave an order to the seller of the cement on the general contractor for the money due. The general contractor failed to pay the seller and the subcontractor refused payment on the contention that the above clause in the contract relieved him from further obligations, particularly because the seller had accepted the order on the general contractor, and had not received payment from him. However, the higher court held the subcontractor fully liable to the seller of the cement, and said:

"The memorandum simply showed an effort on the part of the plaintiff (seller) to insure a payment as the defendant (subcontractor) collected from his debtor, the main contractor, and in no sense imposed a condition that limited the plaintiff (seller) or entitled the subcontractor to slip from under his ob-

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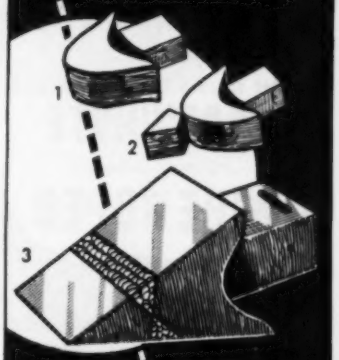

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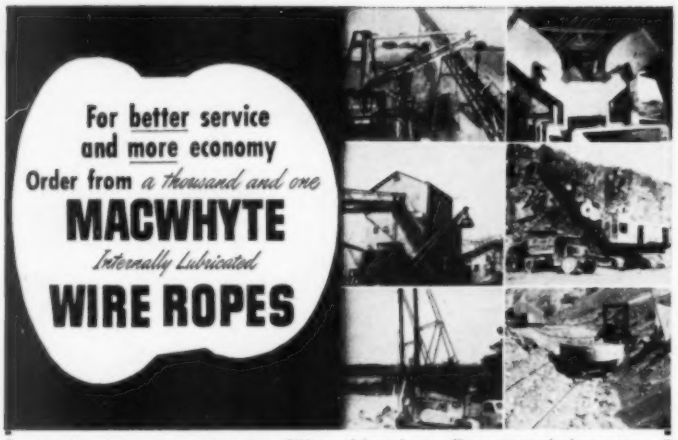

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ligation if the contractor failed to pay him. . . . An order upon a third party for the payment of money which has not been paid or accepted is not a payment of a precedent debt."

Who Is Independent Contractor?

Question: "If a quarry company hires a contractor to do blasting, is the company liable for damages to nearby property or other injuries caused by the contractor's negligence? What is an independent contractor?"

Answer: An independent contractor is a person who contracts to do a piece of work according to his own ideas or in accordance with plans and specifications previously furnished to him by his employer, and the employer has no right to direct the manner of doing the work further than to require it to be done in compliance with the plans and specifications or a contract.

Modern higher courts consistently hold that an employer of an independent contractor never is liable for injuries to persons or property caused by the independent contractor.

A dependable test in determining whether an employee is an independent contractor has been said to be: Who has the general control of the work? Who has the right to direct what shall be done, who shall do it, and how it shall be done? If the answer to these questions shows that these rights remain in the employer, the relation of independent contractor does *not* exist between the contractor and the employer. On the other hand, if the employer has not these privileges, the employee is an independent contractor.

For illustration, in *General v. Motz* 30 S.W. (2d) 952, a quarry company hired an employee named Motz to blast and get out material at a stipulated price per ton. Motz did his own timbering and furnished everything else and bought and used his own powder. Motz, to prevent anybody from stealing the powder, dug a hole in the ground and put the can of powder in it. A boy about nine years old saw where the powder was hid. The powder exploded and he was so seriously burned that he died. The parents sued the quarry company for damages. However, the higher court held that Motz was an independent contractor and reversed the lower court's decision which held the quarry company liable. The court said:

"Under the proof clearly the employee (Motz) worked as he pleased and when he pleased. The employer exercised no control over the work. He (Motz) employed such help as he pleased; he did the work in his own way without any supervision by the employer. In addition to this, the master is never responsible for the acts of his servant, unless done within the scope of his employment. . . . The authorities are agreed that in order to render the master liable for the servant's acts they must have been done while carrying on the master's business and within the course of the servant's employment."

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traffic news

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 88126 (1)—Proposed to establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica), and gravel in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Montezuma, Owensville, Mounts, Cynthiana, Poseyville, Wadesville, Solitude and Mt. Vernon, Ind., 131 cents net ton.

Docket 88149 (2)—Proposed to establish on rock, silica, crude (not ground or pulverized) in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Nashua, Pa., to Detroit, Mich., 274 cents net ton.

Docket 89154 (1)—Proposed to establish rate of 81 cents net ton on crushed stone, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Georgia, Ind., to the following points: Frichton, Huron, Loogootee, Martin, Monigomery, Raney Spur, Shoals, Vincennes, Washington, Wheatland, and Willow Valley.

Docket 88167 (2)—Proposed to establish on stone, crushed, stone screenings, in open-top cars, straight or mixed carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity actual weight will apply, from Marble Cliff, O., to Lockbourne, O., 90 cents net ton.

Docket 88168 (2)—Proposed to establish on slag, crushed, or crushed commercial (other than granulated), in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Hamilton, O., to Lockbourne, O., 189 cents per net ton.

Docket 88169 (1)—It is proposed to establish on brucite and dolomite combined (calcined or dead burned), carloads, minimum weight 60,000 lbs., from Narlo, O., to Chicago, Ill., 26 cents; Fort Wayne, Ind., 18½ cents; Newport, Ky.,

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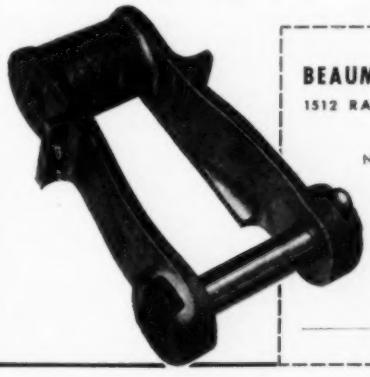

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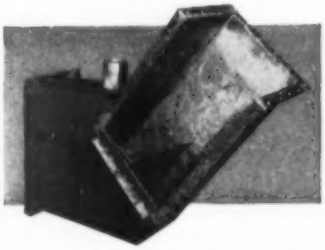

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Docket 88174 (2)—It is proposed to establish on crushed stone, in bulk in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Logansport, Ind., to Frankfort, Ind., 77 cents net ton.

GENERAL FREIGHT TRAFFIC COMMITTEE
Eastern Railroads

Docket Bulletin G-3547 (Carrier)—Proposed to establish on stone, fluxing, furnace or foundry, melting or refractory, (unburned) in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car from Ripplemead, Va., to Ashland, Ky., Ironton, New Boston, and Portsmouth, O., $1.97 per gross ton, including all increases, in lieu of $2.59.

Docket Bulletin G-3629 (Shipper)—Proposed to establish on lime, common, hydrated, quick or slaked, carload, from Ludington, Mich., to Brandenburg, Ky., $7.71 per net ton subject to minimum weight of 15 tons and $6.42 per net ton subject to minimum weight of 25 tons, including all increases.

COLORADO-WYOMING COMMITTEE

Docket No. 130 (Shipper)—Proposed to establish on sand, gravel, crushed stone, carloads, from Golden and Mt. Olivet, Col., to Walt Siding, Col., $65.00 per car, including ExParte 162-6-8 increases, no switching charges to be absorbed, rate to apply only on Colorado intrastate traffic, and to expire December 31, 1951.

PACIFIC SOUTHCOAST FREIGHT BUREAU PROPOSALS

Docket 1589 (Shipper)—Proposed to establish on gypsum, as described in Item 145, Pacific Southcoast Freight Bureau tariff 273-A, carload from Plaster City to Seguro, Calif., 18 cents per hundredweight on shipments in open cars and 19 cents per hundredweight when in closed cars, minimum 40 ton.

Docket 1473 (12-2-50)—Plaster and plaster products approved as follows: (a) from Arden, Neb., 20 cents per hundredweight to points to which present rate of 18 cents hundredweight applies, with corresponding adjustment at other destinations to reflect difference of 2c over Midland or Plaster City, Calif., minimum 20 tons. (b) From Phoenix, Ariz., to Union Pacific points in same destination territory rate based 2 cents higher than from Plaster City, Calif.

Docket 1491 (12-9-50)—Approved rate on stone, natural, except to Campbell, 44 cents, subject to same description as in Column A, Item 19225 F of Tariff 26-U. Also approved from Ash Fork and Drake, Ariz., to Pacific Grove and Santa Cruz, 44 cents, minimum 40 tons.

Docket X 1601 (Shipper)—Request for a rate of 24 cents per hundredweight, minimum 20 tons, on lime, common, hydrated, quick or slaked, carload, from Nelson, Ariz., to Tovrea, Ariz.

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Docket (X) 1598 (Shipper) — Request for rates on lime, carload, as follows:

	Cents Per Hundredweight 30,000 lbs.	60,000 lbs.
From Apex, Henderson, and Slan, Nev., to Reno, Nev.	45 cents	.....
From Diamond Springs, Calif., to Reno, Nev.	17 cents	.....
From Diamond Springs, Calif., to Elko, Nev.	33 cents	32 cents

PACIFIC SOUTHCOAST FREIGHT BUREAU PROPOSALS

Docket 1609 (Shipper) — Gravel, rock, natural, broken, crushed or unground, and sand, carload, from Daggett, Calif., to Topock, Ariz., request rate of 10 cents per hundredweight, minimum weight, established tariff minimum.

Docket 1612 (Shipper) — Proposed to establish on lime, carload, from Sloan and Henderson, Nev., to Phoenix, Ariz., rate of 38 cents per hundredweight, minimum 15 tons.

Docket 1652 (Carrier) — Proposed to establish on plasterboard, carload, from Plaster City to Danville, Calif., rate of 31 cents per hundredweight, minimum 85,000 lbs.

Docket 1654 (Shipper) — Proposed to establish on sand, carload, rate of 14 cents per hundredweight, minimum 50 tons from Bagdad, Calif., to Los Angeles, Calif.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 6244 (c)—Proposed to establish on crude gypsum, in bulk, carload, 80,000 lbs. Carla and Winnfield, La., to Boyles and North Birmingham, Ala., 458 cents open-top cars without protective covering and 491 cents per net ton in closed cars or open cars with protective covering, not subject to X-162-66-68 increases.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 55370 (1) — Proposed to establish on limestone, ground or pulverized through rate of 1,026 cents per ton of 2,000 lbs., not subject to increases under ExParte 162, 166, or 168, carload, minimum weight 30 tons from York, Pa., to Rotan, Tex.

Docket 55605 (2) — Proposed to revise commodity rates on crude gypsum, in bulk, minimum 80,000 lbs. from Carla and Winnfield, La., to Boyles and North Birmingham, Ala., to 458 cents per net ton in open-top cars without protective covering and 491 cents per net ton in closed cars or open cars with protective covering, including all increases.

FREIGHT TRAFFIC COMMITTEE TRUNK LINE TERRITORY RAILROADS

Docket TL M-1197 (Carrier)—Limestone, ground or pulverized, carload minimum weight 40 tons in closed cars from Watertown, N. Y., to Lisbon, Madrid, N. Y., $2.10; Burke and Chateaugay, N. Y., $2.56 per net ton, including all increases.

Docket TL M-1198 (Shipper) — Gravel, in open-top cars, carload minimum weight 60 tons from Carpenterville, N. J., to Newark, N. J., $1.33 per net ton, including all increases, in lieu of $1.75.

Docket Bulletin F.T.C. 326—January 31 —TL M-1214 (Shipper)—Proposed to establish on sand and gravel, in open-top cars, carload minimum weight 90 percent of marked capacity of car, but not less than 90,000 lbs., from Hopewell and Petersburg, Va., to Lone Star, Va., $1.75 per net ton, including all increases. To expire with December 31, 1951.

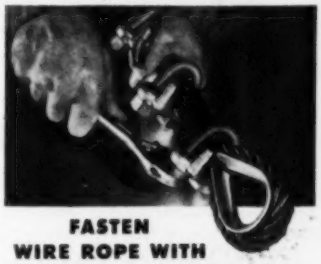
Docket TL M 1240 (Shipper)—Proposed to establish rate on slag, unsuitable for the further extraction of metal, not granulated, carload, minimum weight 90 percent of marked capacity of car, from Bethlehem, Pa., to Logan, W. Va., $4.85 per net ton, including all increases, in lieu of current 6th class rate of $9.96 per net ton.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-1371 (Shipper) — Proposed to establish on sand, carload, as described in item 5900-B, Supplement 15, Western Trunk Line Freight Tariff, 50 ton, minimum weight 90 percent of marked capacity of car but not less than 20 tons, from Portage, Manley, and Browntown, Wis., to Muscatine, Ia., $2.34 per ton (including all ExParte increases).

Docket E-41-1372 (Shipper) — Proposed to establish on sand, carload, as described in column B, Item 25, Western Trunk Line tariff 41-B from Wausau, Wisconsin to Niagara Falls, N. Y. Proposed $6.40 per ton of 2,000 pounds, not subject to X-162-166-168 increases.

Play it Safe!



FASTEN WIRE ROPE WITH

CROSBY CLIPS

1901

America's largest-selling DROP-FORGED fasteners!

SIZES for ⅛" to 3" WIRE ROPE
DISTRIBUTORS EVERYWHERE

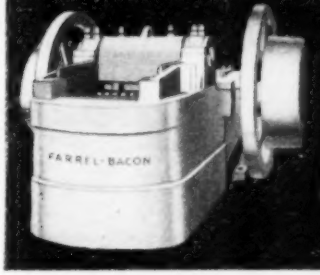
AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA

Is Your Plant Wasting Valuable Fine Sand?

- Sand and gravel operators everywhere are enthusiastic over the performance of the Cottrell WHIRLCONE.
- Users report recovery up to 10 tons per hr. of clean fines in the 30- to 200-mesh range—fines formerly lost in the overflow from the classifiers.
- Low in first cost, in maintenance, in operating cost, a WHIRLCONE pays for itself in a few weeks in sand saved—and blends in the valuable fines you need to meet today's rigid specifications.
- Built in sizes from 6 in. to 25 in. to handle from 38 g.p.m. to 800 g.p.m., WHIRLCONES are sensibly priced from $300 to $950, f.o.b. Los Angeles.

COTTRELL ENGINEERING CO.
322 South Ave. 17, Los Angeles, Calif.

COMPLETE CRUSHING PLANTS
designed and equipped by FARREL-BACON



Farrel-Bacon provides a complete engineering service, including design of plant and supplying all equipment from primary crusher to bin gate. Jaw-type crushers are available in sizes from 60" x 48" to 10" x 7" *Write for complete information.*

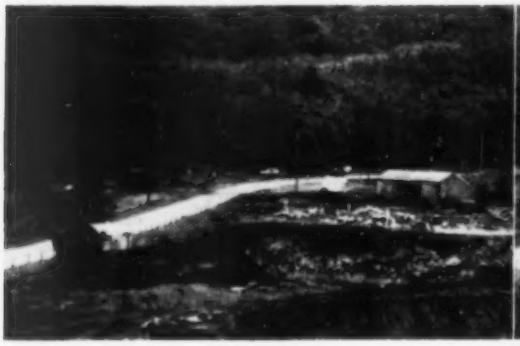
FARREL-BACON
ANSONIA, CONNECTICUT

BA-5

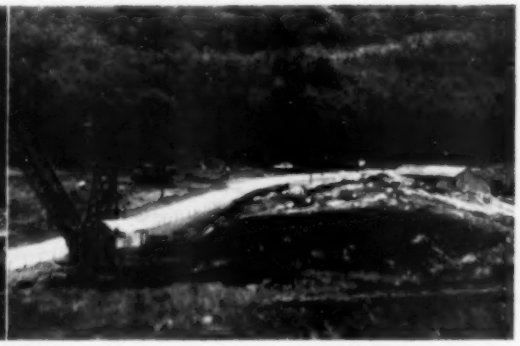
Watch this Blast

Machine-gun camera takes a photo every 1/3 second—shows what really *happens when a blast is shot.*

No wasted explosives gas



① *21 vertical holes, 9,700 pounds of dynamite ready to go.*



② *1/3 second later. See the rock "swell" at first instant of blast . . . but no sign of escaping gas.*

THIS was a typical ROCKMASTER blast by Fauzio Brothers at the Lehigh Navigation Coal Company's Nesquehoning, Pennsylvania stripping operation. Holes were 40 feet deep, with 18-foot spacing, 19-foot burden. The blast was initiated from the bottom of each hole, with ROCKMASTER Nos. 1, 2, 3, and 4 milli-second electric blasting caps.

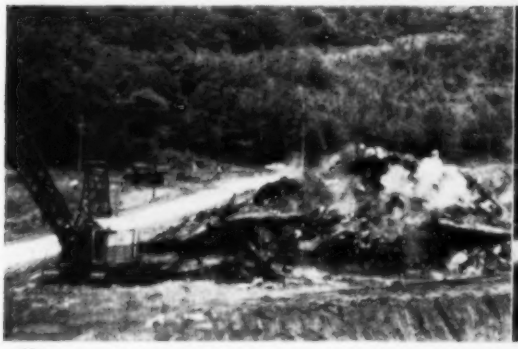
Whether your job calls for blasting rock, coal, ore, ROCKMASTER blasting means true *controlled force . . . controlled throw . . . controlled breakage.* Write today for your copy of the ROCKMASTER booklet showing how you can profit through the use of the correct numbers of the *sixteen* ROCKMASTER milli-second delay electric blasting caps teamed with the ROCKMASTER system of explosives choice and loading methods. Our technicians will be glad to assist you in applying ROCKMASTER to your operation.

GO!

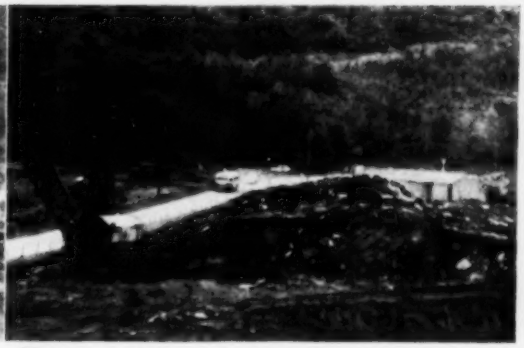
...No wild rock...even at the peak of the blast!

③ *⅓ second after Photo. No. 2. Rock going up... gases still confined where they do most work.*

④ *High point of the blast! Explosives gas has done maximum work.*



⑤ *As rock begins to fall, first traces of spent gases and smoke seep through broken rock. Burden completely shaken.*



⑥ *Rock ready for the shovel. Only three minutes after traffic was stopped it's on its way again.*

Rockmaster—Reg. U.S. Pat. Off.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

Tops in sales because they keep costs *down*!

Month after month, year after year, International Trucks cut hauling costs and give you better on-the-job performance.

Where's the proof?—in the carefully-kept cost records of heavy-duty haulers; the same men who have kept Internationals first in heavy-duty truck sales for 19 years. Their records are black-and-white proof that Internationals give you lower operating and maintenance costs even on the toughest jobs.

Where's the pay-off for you?—every new International Truck is *heavy-duty engineered* with extra stamina in every part to give you this same cost-cutting performance with longer truck life on *your* job.

You get the right truck for your job

When you buy a new International Truck you don't gamble with a "misfit" truck. You get the engine, the transmission, the axle, *everything* specialized to fit your particular job. You get a truck that's built to last and give you more efficient on-the-job performance. That's why over half the Internationals built in the last 45 years are still in operation.

You get a truck that drivers go for

The better a driver likes his truck, the better care he takes of it. That's why every new International is specialized from the driver's standpoint, too. An all-new steering system gives the driver more positive control from a more comfortable position. New Super-maneuverability lets him turn in the shortest *practical* circles—helps him in the tight spots.

The new Comfo-Vision Cab is the "roomiest cab on the road." It has mighty comfortable, fully-adjustable seats. And the driver enjoys full-front visibility through the one-piece Sweepsight windshield.

With 87 basic models, thousands of specialized variations, in the world's most complete line of trucks, you're sure of getting the right truck for your job. See the new International Trucks at your nearest International Truck Dealer or Branch *now*.

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

International Harvester Company · Chicago

See the new

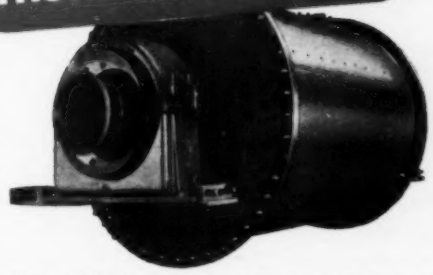
INTERNATIONAL TRUCKS

Every model heavy-duty engineered for the long haul

Engineered for *Grinding Mills*

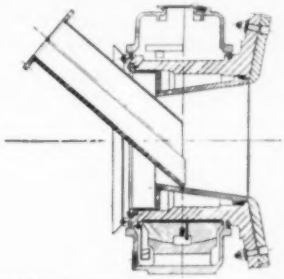
ALLIS-CHALMERS

TRUNNION BEARING



EXTRA LARGE — Diameter of king-size Allis-Chalmers trunnion bearing is almost twice the bearing length, large enough to permit spout feeding. Large bearing proportions will provide long service despite heavy-going demands on mill. Internal oil system can be checked visually by means of hinged flap on bearing housing.

LOW BEARING PRESSURE — A spherical seat keeps mill in perfect alignment with bearings. Load is distributed evenly across full face of bearing, reducing wear. Cooling coils embedded in babbitted bearing cool the oil at point where most heat is generated. Piston ring seals hold oil in and dirt out . . . oil supply is always clean.



LONG BEARING LIFE — Internal oiling buckets carry lubricant to oiling pan. Oil is supplied the instant mill is started. All large bearings are fitted with lubricant pump for floating the mill during starting. This overcomes high starting torques and eliminates "dry" starting after shut-downs, which causes about 75 percent of bearing wear.

During normal operation, a film of lubricant separates trunnion from bearing. No metal to metal contact.

After a short shut-down period the thickness of this protecting film of lubricant is reduced.

After long shut-down, lubricant film is broken entirely. The result is damaging metal to metal contact between trunnion and bearing.

Lubricant pump floats the mill before starting . . . re-establishes protecting film of oil. Power needed for starting is greatly reduced, too.

Additional facts about trunnion bearings and other modern features of Allis-Chalmers grinding mills may be obtained without obligation from the A-C representative in your area or by writing to: Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3348

Texrope is an Allis-Chalmers trademark.

Trunnion bearings are built by Allis-Chalmers in 10 sizes from 14 x 8 to 54 x 22-in. The six smallest sizes are available as grease lubricated bearings; seven largest sizes as oil lubricated bearings.

ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Motors

Controls

Texrope Drives

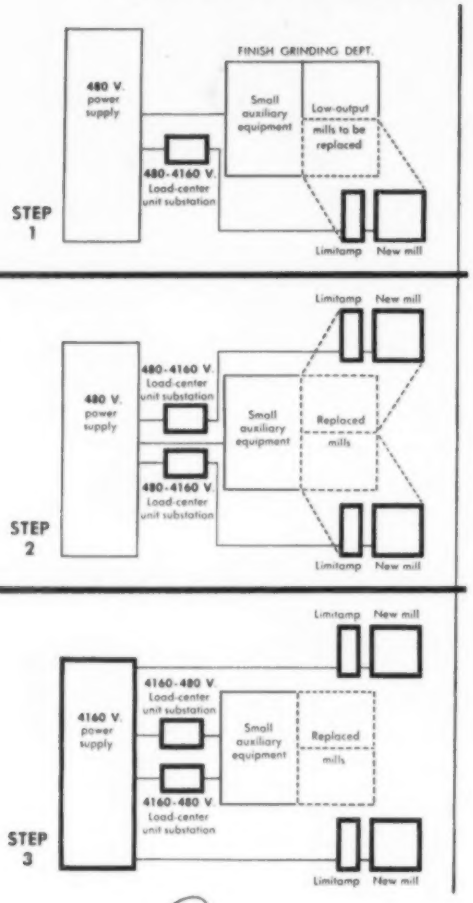
Vibrating Screens

Crushers

Kilns, Coolers, Dryers

Now—MODERNIZE *without complete shutdown!*

CHANGE TO HIGH VOLTAGE—*step by step!*



Essential to cement-plant expansion tomorrow as well as today, electrical modernization calls for distributing power at high voltage direct to large equipment, and also to load-center unit substations where it is stepped down for small auxiliary equipment. For example, in finish grinding, here's one way many cement plants are modernizing with a minimum of production delay.

1. Replace a group of old, low-production, low-voltage mills with a new high-output mill driven by a high-voltage synchronous motor with limitamp control. Connect in reverse a load center unit substation so that the existing 480-volt supply is stepped *up* to 4160 volts for the new motor, placing the new mill in operation. The rest of the department continues to operate as before.

2. Similarly, other new high-voltage units are then added, one at a time. All equipment continues to operate from the 480-volt supply.

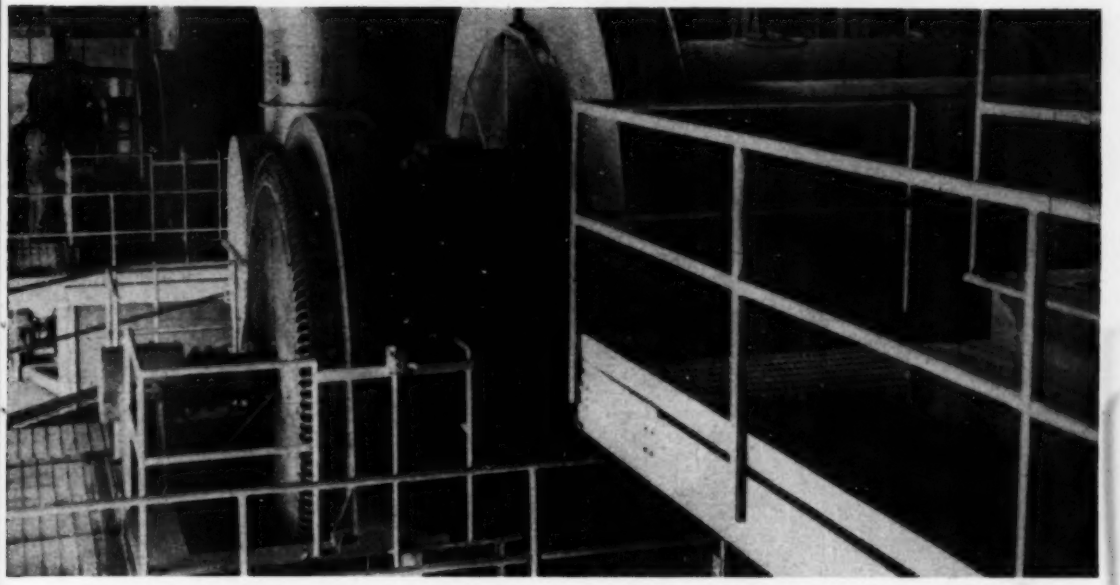
3. Replace low-voltage with high-voltage power supply by making the necessary changes at the main plant substation and in the distribution lines. (In some cases, generators used for local power will be rewound one at a time.) Connect the newly available high-voltage power direct to limitamp controllers and the high-output mills. Then reverse the load-center unit substations so that they now step *down* high-voltage to low-voltage power for small auxiliary equipment.

You can put your confidence in—

GENERAL ELECTRIC

658-5

ELECTRICALLY



Increased cement production is provided by replacing several small, low-output mills with one large modern mill driven by a G-E high-voltage synchronous motor. G-E synchronous motors, high in operating efficiency for driving constant-speed cement-plant machinery, need only minimum maintenance, maintain exact speed, improve over-all plant power factor. The two G-E 1000-hp, 180 rpm, 4160-volt synchronous motors shown are driving clinker-pulverizing ball mills in the finishing department of a large Western cement plant, electrically modernized for greater output.

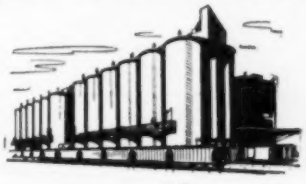
SIMPLIFY THE CHANGE—*with co-ordinated G-E units!*

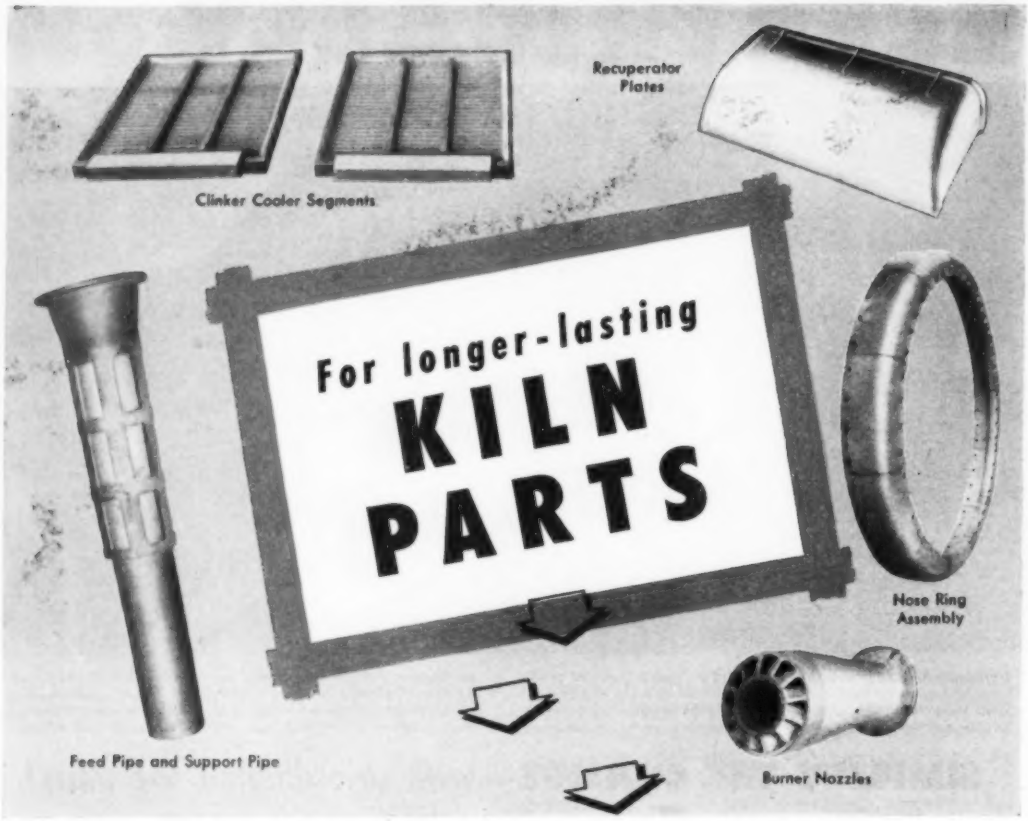
Time-and-cost-saving way to bring in purchased power to your plant is through a G-E master unit substation. All components are fully co-ordinated and metal-enclosed for personnel protection. Their flexibility makes these compact, space-saving units applicable to practically any cement-plant arrangement. The G-E master unit substation shown is 3750 kva, 66,000-4160 volts.

Complete and easy to specify, G-E load-center unit substations are assembled and wired for quick, easy installation. Standardized "building-block" design permits lower unit cost plus flexibility of arrangement to simplify plant modernization. The 1000-kva G-E unit shown supplies power to auxiliary motors in the kiln department of an electrically modernized Eastern plant.

Effective centralized control of high-voltage motors—plus sure short-circuit protection—is provided by G-E limitamp controllers which receive power direct from a master unit substation. Co-ordinated components are factory-assembled in steel cubicles, save installation time and space. The units in this modern cement plant control 1000- and 500-hp 4160-volt synchronous motors.

NOW IS THE TIME—when you are in the planning stage for modernizing your cement plant—to call in a G-E specialist to study your plant's individual needs, help you develop a plan for purchasing and modernizing on an easy, step-by-step basis. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*





Other Thermalloy Uses in the Cement Industry

- Chain, conveyor, clinker, drag
- Cooler lifters, spouts, grating, side plates
- Dampers
- Kiln end rings, feed chutes, hangers
- Kiln shell segments
- Slurry feed pipes

Investigate THERMALLOY*

Thermalloy has proved in hundreds of kiln installations that it can take heavy loads and rough usage... resist corrosive gases, excessive heat (up to 2100°F) and abrasives.

Thermalloy is not just one alloy. It is a *group* of alloys, each developed to meet a specific heat and abrasion problem.

An Electro-Alloys engineer can show you how Thermalloy kiln parts can give you *lower operating costs per hour* . . . assist you in selecting the design best suited to your needs. Call your nearest Electro-Alloys office, or write Electro-Alloys Division, 2132 Taylor Street, Elyria, Ohio.

*Reg. U. S. Pat. Off.

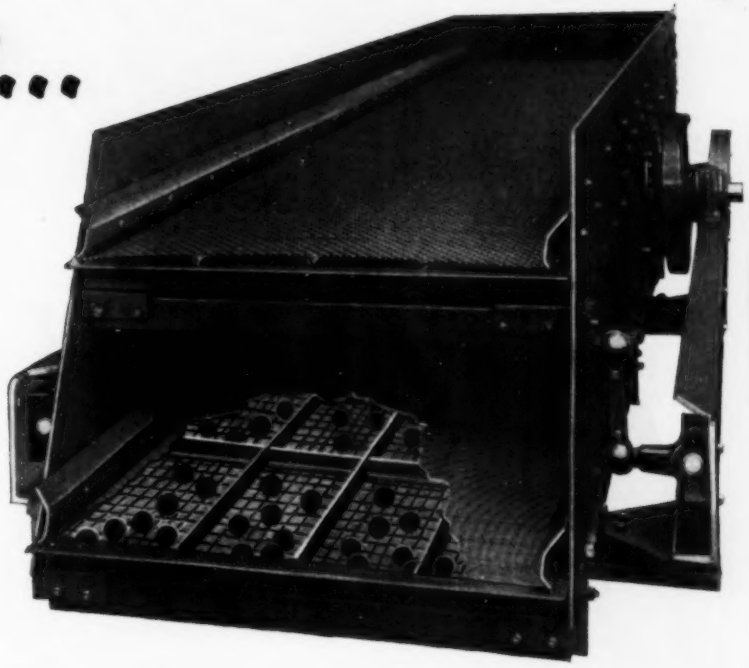
AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

Ag-Lime Accuracy

PLUS...

TOP TONNAGES PER HOUR . . . YOURS WITH SECO VIBRATING SCREEN AND BALL TRAY ATTACHMENT



Seco's "sharp whip" and true circular motion are renowned for screening damp sticky Ag-lime and other fines. Add to this the effectiveness of the bouncing balls in the ball tray attachment and you readily understand how you greatly reduce clogging meshes and excessive binding. Instead, you're ready for fast, accurate, low cost ag-lime screening . . . without constant watching.

Send for Catalog #203.

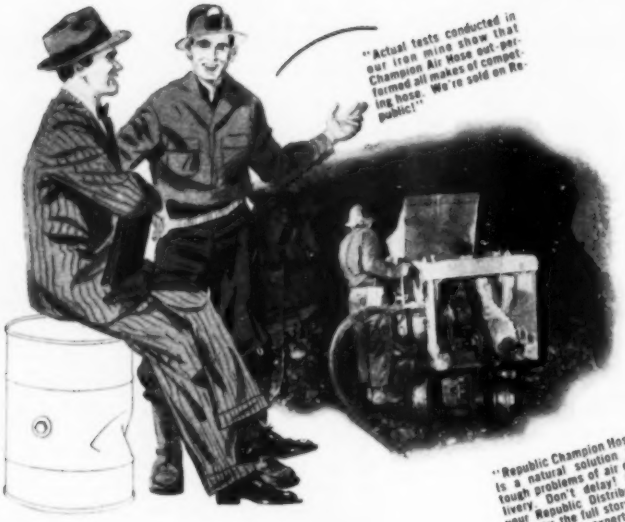
IMPORTANT: Pictured above is a double deck Seco with ball tray attachment. This attachment may be had on single deck Seco's as well . . . and on one or more decks of Seco double and triple deck models.

SECO
TRUE CIRCULAR ACTION
VIBRATING SCREENS

What's ahead? Prepare now for profitable production during the years to come! Get the facts on Seco dependability.

Write: Screen Equipment Company, Inc.
1750 Walden Ave., Buffalo 25, N. Y.

One of America's Leading Makers of Vibrating Screens Exclusively.


"Actual tests conducted in our iron mine show that Champion Air Hose out-performed all makes of competing hose. We're sold on Republic!"

An oil-resistant Neoprene tube, a rubber-insulated, premium high-tensile braided carcass and a resilient yellow safety cover make Champion Air Hose the toughest product of its class anywhere in the world.

"Republic Champion Hose is a natural solution to tough problems of air delivery. Don't delay! Let your Republic Distributor give you the full story today. His free, expert recommendations save you money."

Try Republic First...

CHAMPION CALIBRE AIR HOSE

Equip with Republic's Champion All-Service Air Hose and you're set for a good long period of trouble-free operation. *And that goes for any job no matter how tough!* Republic's Champion Air Hose is colored yellow for safer visibility. It's specially fabricated for added strength and flexibility without any increase in over-all hose weight. Champion Hose is another great achievement produced by Republic, *specialists in industrial rubber products for a half century.* Contact your local Republic Distributor or write direct for full facts.

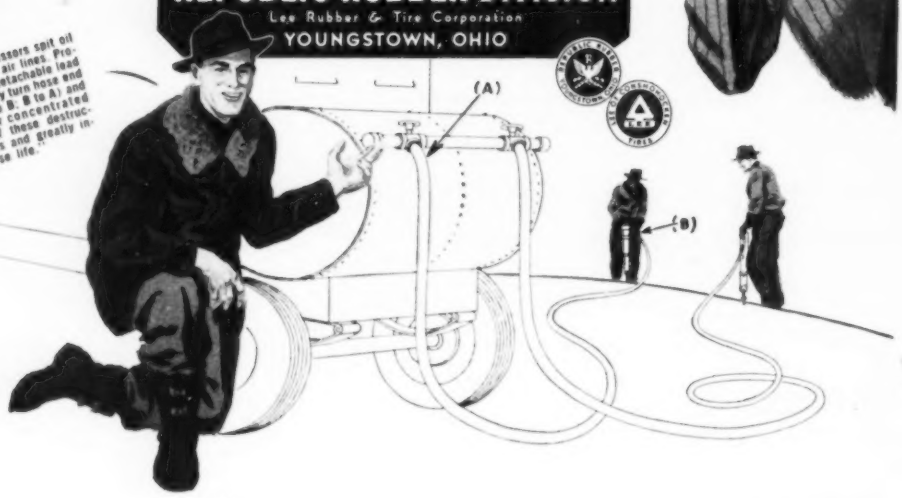
INDUSTRIAL RUBBER PRODUCTS BY

REPUBLIC RUBBER DIVISION

Lee Rubber & Tire Corporation

YOUNGSTOWN, OHIO

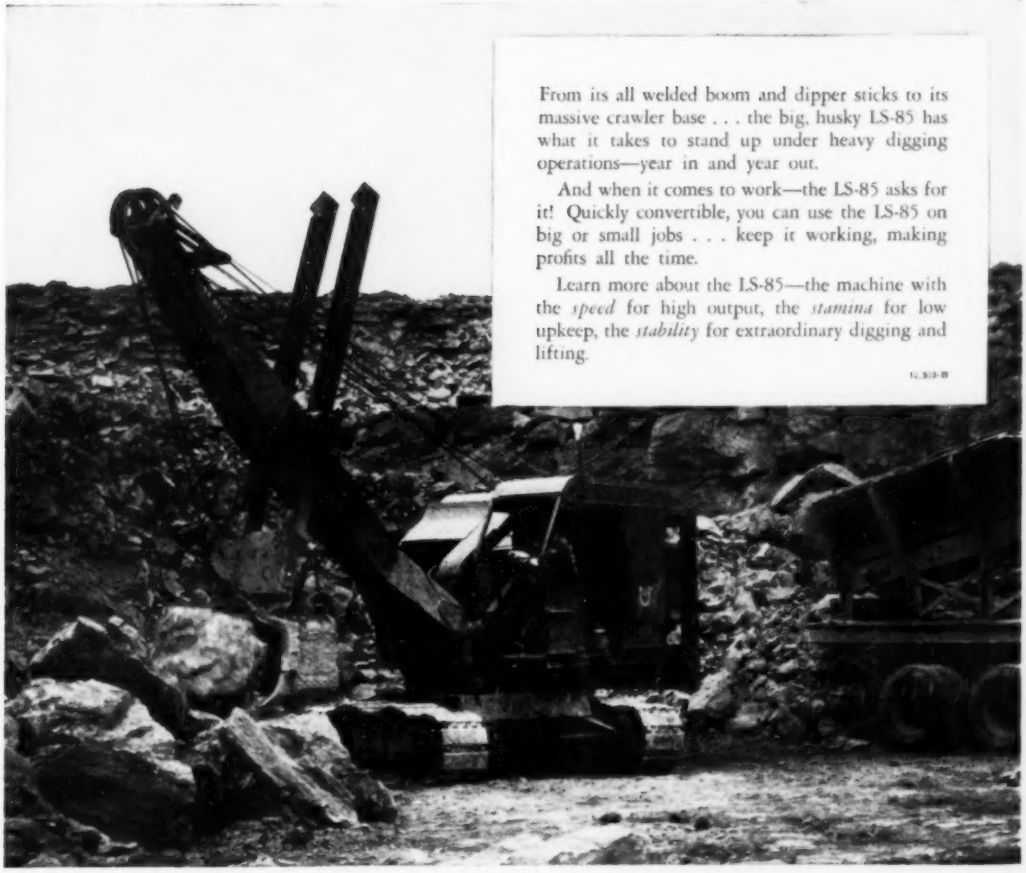
"Most compressors spit oil and heat into air lines. Provide a short detachable lead or periodically turn hose end for end (A to B, B to A) and you'll deter concentrated buildups of these destructive agents and greatly increase hose life."



Here's why operators call the LS-85 the

SUPER 3/4 YD. SHOVEL-CRANE!

- Heavy-duty, all-welded construction..
- Designed to assure short, positive turns in steering
- Wide, long frame for ground-hugging stability
- 13" ground clearance — nothing to snag or foul..
- Fully convertible for all attachments
- Service and repair parts stocked by your local distributor



From its all welded boom and dipper sticks to its massive crawler base . . . the big, husky LS-85 has what it takes to stand up under heavy digging operations—year in and year out.

And when it comes to work—the LS-85 asks for it! Quickly convertible, you can use the LS-85 on big or small jobs . . . keep it working, making profits all the time.

Learn more about the LS-85—the machine with the *speed* for high output, the *stamina* for low upkeep, the *stability* for extraordinary digging and lifting.

12,303-B

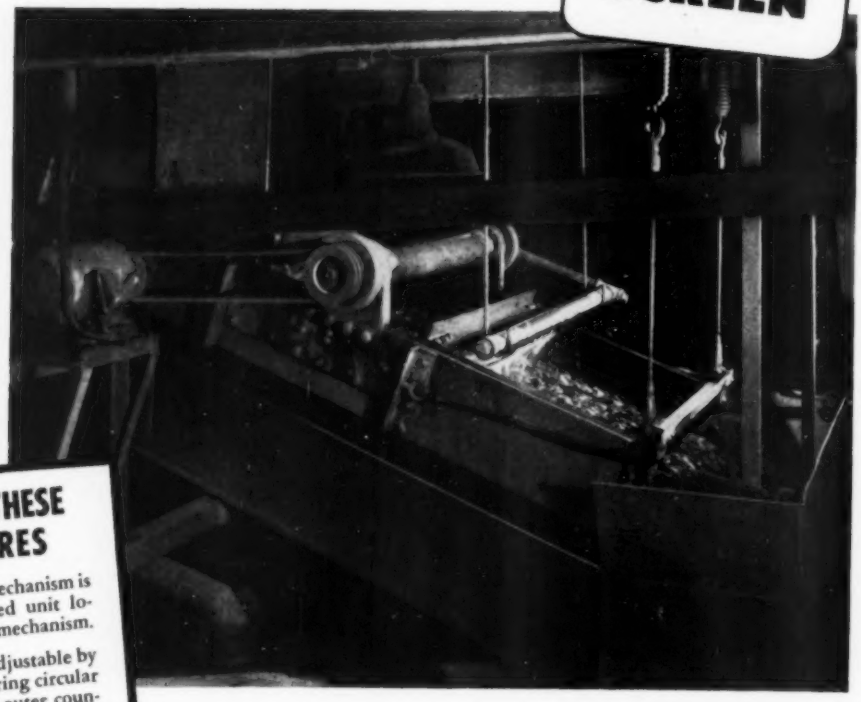
LINK-BELT SPEEDER
CORPORATION

Builders of the most complete line of cranes, shovels and draglines
CEDAR RAPIDS, IOWA

Save Money Screening

Fine to Medium-Coarse Materials

AERO-VIBE SCREEN



CHECK THESE FEATURES

- Vibrating mechanism is self-contained unit located above mechanism.
- Vibration adjustable by merely altering circular position of outer counterweights at end of shaft.
- Easy to remove vibrating mechanism — remove only eight bolts.
- True running drive — screen sheave does not vibrate with screen.
- Sizes 2 x 4 to 5 x 10 ft. Open or enclosed. 1 to 3 decks.

LOW FIRST COST plus low operating costs — no wonder mining men have found this vibrating screen profitable for screening or rinsing a variety of ores.

Simple two-bearing Allis-Chalmers design has fewer parts, resulting in easy maintenance and low power costs. *Aero-Vibe* screens are built sturdily — they deliver a top-notch job of screening year after year despite tough-going service.

The Allis-Chalmers representative in your area will be glad to show you how *Aero-Vibe* screens can fit into your operations. Call him, or write for **Bulletin 07B6099.** A-3176

Allis-Chalmers
Milwaukee 1, Wis.

ALLIS-CHALMERS

Aero-Vibe and *Texrope* are Allis-Chalmers trademarks.

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Motors

Controls

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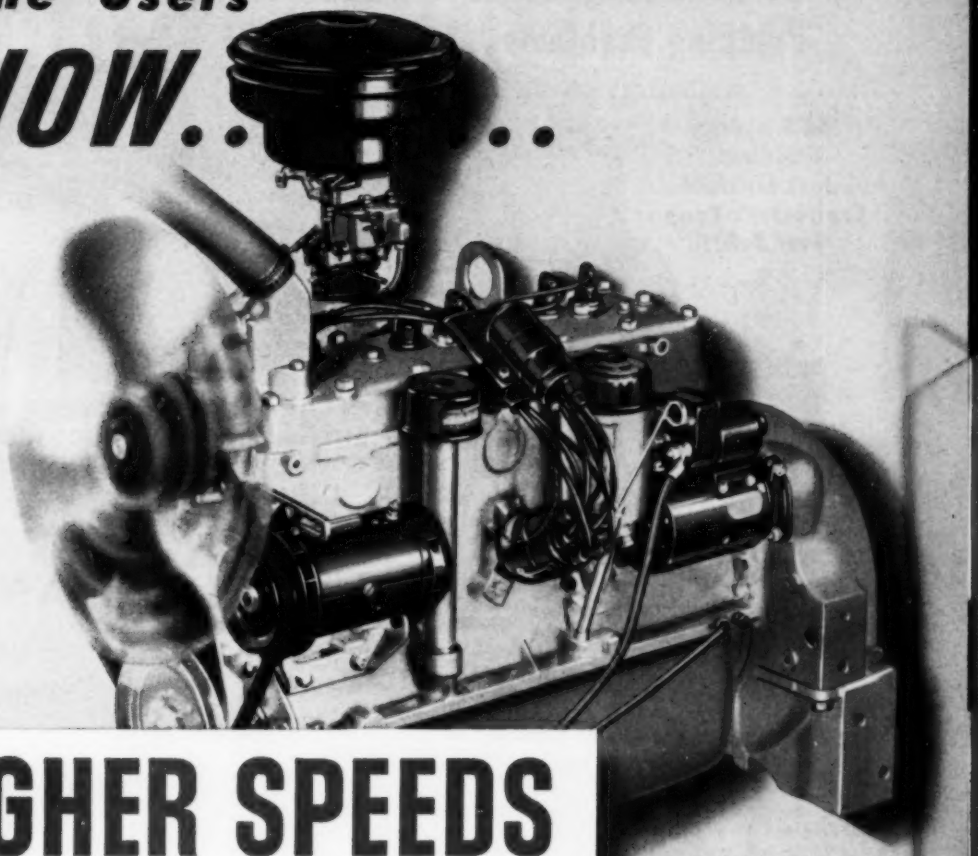
Crushers

Kilns, Coolers, Dryers

Now Industrial Engine Users

KNOW...



Chrysler Industrial 7—one of eight basic models.

HIGHER SPEEDS

MEAN BETTER PERFORMANCE AND LOWER COSTS!

For years, operators of gasoline powered industrial equipment, and the engineers who design it, have known that higher speed engines deliver better performance.

Now Chrysler has proved that you can have all the advantages of higher speed—and *lower costs, too.*

Continuous Chrysler research in higher alloy steels and famed Chrysler engineering have produced an industrial engine that runs faster and lasts longer. An engine that *costs less to buy and less to operate!*

A letter of inquiry will bring an engineer to your desk, well qualified to discuss application to your equipment. Address

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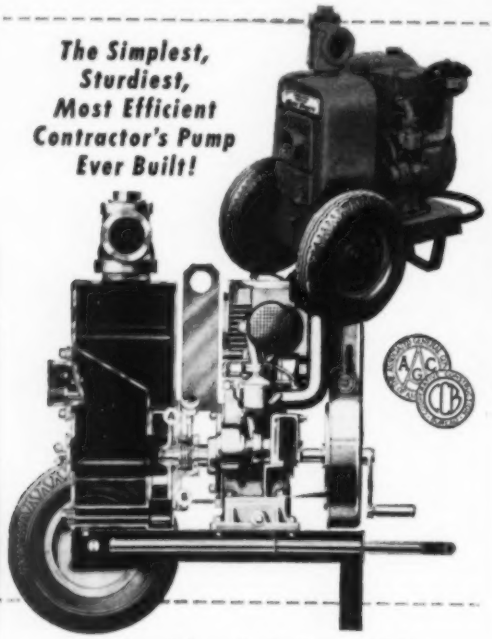
Worthington's Answer To Your Toughest Pumping Problems...

The Simplest, Sturdiest, Most Efficient Contractor's Pump Ever Built!



Impeller (A) and shaft seal (B) — the only moving parts

Only two moving parts in a Worthington Blue Brute Self-Priming Centrifugal! And no ports, jets or valves to clog up. Instead, positive self-priming results from expert application of basic hydraulic principles — a Worthington specialty for over 100 years.

Materials are *right* — in the right places. Impeller and renewable wear plates are of special abrasive-resisting alloy . . . the dual shaft seal is fully enclosed and self-adjusting . . . the steel alloy casing defies rust, erosion and hard knocks . . . the air-cooled engine is easy-starting. So, with all trouble-making gadgets left out, this Blue Brute Portable has absolutely everything you want for fast, dependable pickup, plenty of reserve power — and next to no maintenance!

See your nearby Worthington Distributor for the A. G. C.-rated sizes, base-mounted or with steel or pneumatic-tired wheels.

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IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB HT-2

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AUTOMATIC CONTINUOUS OPERATION
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There are extra dividends available in the operation of your plant when you use Ellerman Calciners . . . let us explain the exclusive features . . . write today for literature and detailed information applicable to your operation.

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THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF

OF SIX MAKES . . .

Highest profit— Lowest keep!

STEARNS 50

2-AT-A-TIME

Concrete Block Machine

DUNBRICK COMPANY

2601 - 12TH AVENUE NORTH
ST. PETERSBURG 6, FLORIDA

Feb. 22, 1951

Mr. C. F. Rowell
Vice-President in Charge of Sales
Stearns Manufacturing Company, Inc.
Adrian, Michigan

Dear Mr. Rowell:

We have operated our Stearns 50 for eight months, keeping accurate production and maintenance records in order that we might compare the results on the Stearns 50 with our past experience on other machines.

During our 15 years in the concrete block business we have operated six makes of block machines. We have always known that maintenance costs greatly affect profit.

The answer is simple — we would buy another Stearns without hesitation.

Very sincerely,

T. W. Clarkson

T. W. Clarkson
Partner

T. W. Clarkson, J. E. Bryan and W. E. Reynolds, management of Dunbrick Company, suppliers of concrete block to St. Petersburg and West Central Florida. By accurate comparisons of production and maintenance figures on six different makes of block machines used in their plant over the past 15 years, these men have proved to themselves, beyond question, that the low maintenance Stearns 50, now in their plant, far and away heads the list for high profits.

The Stearns 50, shown here in operation in Dunbrick's St. Petersburg, Florida, plant, incorporates the best features ever used in famous Stearns machines—plus many new engineering developments. Dual vibration—extra rugged construction—every part easily accessible—push-button control—split cycle operation—finest electrical equipment—positive height control—low maintenance—more production per machinery dollar.

PERFORMANCE IS PERFECTION . . . PERFECTION IS PROFIT!

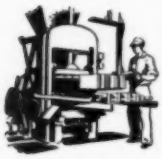
MODERNIZE WITH A STEARNS! BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW!

STEARNS

MANUFACTURING COMPANY · INC

ADRIAN • MICHIGAN

STEARNS 15 · STEARNS 50 · JOLTCRETES · CLIPPER STRIPPERS · MIXERS · SKIP LOADERS · TURNTABLES · SINTERLITE



Better for making products

Because of Duraplastic cement's air-entraining feature, a damper mix can be used. This mix is more "rubbery" and more cohesive. It holds together better and feeds easily through machines. Duraplastic has proved its superiority for silo staves, concrete pipe, brick, block, drain tile, and a host of other concrete products.

This silo, on a Minnesota farm, is made with Duraplastic silo staves from Madison Silo Company, Detroit Lakes, Minn.; silo erected by same company.

Makes better concrete products

Plants using Duraplastic report reductions in costly breakage of green products, fewer culls and throw-backs. Finished units exhibit greater resistance to passage and absorption of water. Appearance and face texture are generally improved. Edges and corners are clean cut and truer.

YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

ATLAS®

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

Makes Superior Concrete Products at No Extra Cost

PQ-D-119

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

NEWS OF CONCRETE MANUFACTURERS

$350,000 Plant Planned By Katterjohn at Paducah To Make 30,000 Units per Day

George W. Katterjohn, Katterjohn Concrete Products, Inc., Paducah, Ky., has announced plans for the construction of a $350,000 concrete block plant in that city during the next few months.

It is expected that the new facilities will have a capacity of 30,000 blocks per 8-hour shift when full production is reached. Virtually all hand labor will be eliminated. A 600-ft. railroad spur will be built to the plant site, and bulk cement will be transported to storage by rail cars. Automatic operation will be the rule throughout the plant. Every 15 seconds a new block will emerge from the block machine, to go to one of the 12 steam curing rooms. The units will be handled by hydraulic fork lift trucks, each having a 3-ton capacity.

Mr. Katterjohn stated that the 150- by 200-ft. building will be constructed—of course—of concrete units, and that the storage yard will have a capacity of 2,000,000 blocks.

Production of concrete products will continue at the present plant at Eighth and Jones in Paducah until the new facilities have been completed.

Wichita Concrete Producers Launch Expansion Programs

Five Wichita, Kan., concrete materials companies have announced expansion programs according to the Construction Industries Committee of the Wichita Chamber of Commerce.

United Cement Products Company, 1329 North Mosely, reports its capacity will be doubled about May. 1. Kansas Coal & Material Company is adding machinery to more than double its concrete block production.

Walt Keeler Company, Inc., reports that by June 1 it will have bought or rebuilt 21 White transit mixer trucks. Dolese Brothers are building a third batch plant at West Street and Pawnee Road, an area in which an industrial expansion is in progress. Allen's, Inc., is bringing its fleet of mixed-in-transit trucks to 16 by adding three more units.

University of S. Carolina Offers Course in Concrete

The University of South Carolina at Columbia has organized and is conducting a special course in the university evening school at the request of a number of employees of the DuPont plant at near-by Camden.

This engineering course in the theory of reinforced concrete carries the usual three semester hours of college credit and is very beneficial to those in road construction and allied fields. Professor J. B. Shand of the school of engineering is the instructor.

Concrete Products Promotion Is Aim of K. C. Organization

Mo-Kan Concrete Products Association is a new Kansas City organization for the improvement and promotion of concrete products. The officers are George W. Goelitzer, president; George W. Kulhavy, vice-president; L. L. (Mike) Daugherty, secretary; and Gus Main, treasurer.

The executive committee is composed of C. E. Swanson, John Slaton, Dale Williamson, and the officers. Tip Brown has been named executive secretary for the group. Business headquarters for the present are at 311 West 51st Terrace, Kansas City, Mo.

Indiana Concrete Makers Form Masonry Association

About 20 manufacturers of concrete products in southeastern Indiana have formed a Concrete Masonry Association for the purpose of promoting the use of concrete products, the maintenance of quality in manufacture, and the exchange and discussion of ideas and problems.

President of the organization is Roy E. Miller, Miller Block Company, Lawrenceburg, Ind., and secretary-treasurer is Harold Steinkamp of Batesville, Ind.

The Chester Cliff Cement Block Company of Canandaigua, N. Y., has been sold to Mr. and Mrs. Sherman H. Beeman of that city. Operating under the name of Canandaigua Block Yard, Inc., the firm will continue to manufacture concrete blocks and serve as distributor for cement paint and water-proofing material, gravel, cement, and stone.

Coming Events

April 30-May 4, 1951—Chicago. Materials Handling Conference and National Materials Handling Exposition. International Amphitheatre.

Florida Concrete Pipe Co. Moves Tallahassee Office To Roomier Quarters

Florida Concrete Pipe Company, an affiliate of Universal Concrete Pipe Company, has moved to more spacious quarters in the Center Building at 330 South Adams St., Tallahassee, Fla.

A complete line of concrete sewer pipe and culvert ranging from 6 in. to 120 in. interior diameter features the products sold by the company. Pipe is available in reinforced form from 12 in. diameter and up.

Among the other items handled by Florida Concrete Pipe Co. are reinforced flat-base concrete pipe (for cattle or pedestrian passes), railway markers, open and closed-faced concrete cribbing, and concrete septic tanks.

John A. Harris, district manager of the company at Tallahassee, is assisted by Curtis Krieg and R. E. Pilcher.

U.S. Pipe & Foundry Sole Owner Of United Concrete Pipe Corp.

The United States Pipe & Foundry Company, joint owner with Compagnie de Pont-a-Mousson of Nancy, France, of the Pontusco Corporation, which owns all of the common stock of the United Concrete Pipe Corporation of California, recently purchased the French interest, according to press announcements.

United Concrete Pipe Corporation is an important supplier of concrete pipe in California and other Western states and will continue under the same management, it was stated.

Worthcrete Company Plant Opened at Fort Worth, Tex.

Operating as a concrete products division of the Texcrete Company, the Worthcrete Company, Fort Worth, Tex., is producing a variety of items at its new plant.

Colored concrete brick in the standard size and also in the new Roman style, precast concrete joists, and Worthcrete and Texcrete haydite units are among the products of the firm. J. Weldon White is manager of the new plant.

The new home of Vander Heyden, Inc., in Milwaukee, a $50,000 structure built entirely of concrete masonry made by the firm, not only serves to house the concern, but also effectively promotes Vander Heyden products. The building is so arranged that customers must pass through the display room—ah! that's the catch—in order to reach the business offices.

Wisconsin Products Men Discuss Cement Supply At Milwaukee Meeting

Worries about the cement situation with opinions ranging from cautious optimism to deep pessimism were voiced at the Wisconsin Concrete Products Association meeting held recently in Milwaukee.

Paul F. Jensen, vice-president of the Jensen Block and Supply Company, Racine, stated that he believed the supply would not be any better than it was last year. Raymond Krienke, manager of the Merrill (Wis.) Concrete Works, said that he could get only one car of cement at a time and that he had stopped retail sales of cement.

Harry N. Sorensen, manager of the Waylite Concrete Masonry Company, Racine, and president of the association, struck a more optimistic note, stating that cement companies were increasing their production and that a large output would help the situation for the concrete products manufacturers. E. W. Dienhart, executive secretary of the National Concrete Masonry Association declared that the outlook was not clear but that with the cement industry working at full capacity and with less construction in prospect, there should be enough cement. Walter Blied of the Alpha Portland Cement Company, Madison, pointed out that the demand has been very high all winter in spite of bad weather and that the supply might be shorter than in 1950 if this trend continues.

N.R.M.C.A. Honors Dolly Gray Through Fellowship Grant

A fellowship in concrete research at the University of Maryland, open to engineering graduates of accredited colleges in the United States, was established by the board of directors of the National Ready Mixed Concrete Association in memory of the late C. (Dolly) Gray at the New Orleans meeting of that body in February. The fellowship will pay the student's full expenses while he works for a master's degree.

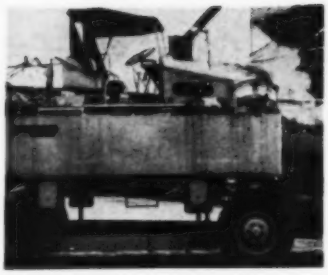
Mr. Gray, who died in 1949, had been president and owner of the Ready-Mix Concrete Corporation of Indianapolis, Ind., and had been active in N.R.M.C.A. affairs for many years.

The grant was established at the University of Maryland because the N.R.M.C.A. has research experiments in progress at this institution.

Straddle Carrier Adapted For Block Delivery Role

L. M. Kennedy and Sons, 4400 Rising Sun Avenue, Philadelphia, Pa., have modified their Gerlinger straddle carrier into a delivery truck by use of some ingenuity and a few common materials.

Concrete blocks are loaded by lift truck onto a steel platform that fits the straddle truck frame. When loaded with about 400 blocks, the machine is driven to the job and maneuvered to the best spot for easy handling. Then a power-operated



Modified straddle carrier that delivers about 400 concrete blocks and unloads them via pusher mechanism operated from power take-off.

pusher bar gently shoves the blocks off the platform onto the ground.

The pusher mechanism is operated by power take-off on the rear axle, which operates a chain drive along the length of each shoe of the truck. The chain drive moves a steel pusher bar the length of the truck and at right angles to the blocks. They are gently shoved off the steel bed, which is secured to the truck by cable.

Besser, Marietta Concrete Form Equipment Concern

Organization of the Lightweight Aggregate Equipment Company, with offices and a plant at Marietta, O., was announced recently as a joint venture of the Besser Manufacturing Company, Alpena, Mich., and the Marietta Concrete Corporation.

Besser manufactures machinery and equipment for the concrete products industry. The Marietta firm has pioneered in developing lightweight aggregates, and recently announced a new product, "Beslite."

It is planned that the new concern will design and make equipment for plants to produce Beslite.

New Pumice Block Plant Opened at Lawrence, Kan.

An output of 2,000 blocks a day is coming out of the new Morton concrete block plant at Lawrence, Kan. Employing a five-man crew, the concern is owned by Walter and Clark Morton Jr., and their father Clark Morton Sr., all of Lawrence.

The Mortons, who originally went into business selling roofing materials, make pumice blocks in three sizes, the newest of which is a unit 4 in. high. This type of block is employed to give the effect of Roman brick construction in an exterior wall.

Pre-Mix Concrete Company improvements at Kennewick, Wash., recently completed include the erection of a new garage-warehouse, remodeling and enlargement of the office building, and expansion of the firm's gravel pit. A second plant is operated by the company at Richland, Wash. J. W. Murphy of Spokane is president.

Shipper's Letter Explains Free Unloading Time Of Frozen Shipments

The cinder department of the Foreston Coal Company, 500 Fifth avenue, New York 18, N. Y., large shippers of anthracite cinders to concrete cinder block plants, has sent the following letter to its customers. (This has considerable value to all purchasers of aggregates shipped by bulk, and is being reprinted by courtesy of the Foreston Coal Company.)

Mr. John Doe,
Everywhere, U.S.A.
Re: Demurrage Charges
Dear Mr. Doe:

Several of our cinder block manufacturer customers have told us of their difficulties, at one time or another, in unloading cars of frozen cinders, and of the accompanying demurrage charges. We would like to point out that should you receive a car of frozen cinders, regardless of from whom you purchased them, you are entitled to receive from the railroad, an extra 48 hours for unloading, thus giving you a total of 96 hours' free time before the car goes on demurrage.

The authority for this ruling is shown in the following Tariff: Mr. B. T. Jones, Agent, Freight Tariff No. 4-Z, I.C.C. No. 4257; Page 46, Rule 8, Item No. 535, Section A, Paragraph 2.

Since there are a few routine steps that must be taken in order to receive the extra 48 hours' free time, we quote below the actual rule:

"When, at the time of actual placement, lading is frozen or congealed so as to require heating, thawing, or loosening, to unload, the free time shall be extended 48 hours making a total of 96 hours' free time, provided that the consignee shall, prior to the expiration of 48 hours from the first 7:00 a.m. (exclusive of Saturdays, Sundays, and holidays) after actual placement on an other-than-public delivery track, or from the first 7:00 a.m. (exclusive of Saturdays, Sundays, and holidays) after actual placement and after the day on which notice of arrival has been sent or given by this railroad of a car for delivery on a public delivery track, send or give this railroad's agent a written statement, that the lading of the car or cars therein identified by initials and car numbers will require heating, thawing or loosening to unload. If such written statement is mailed, the date of mailing will be settled by the postmark."

Naturally, we would all prefer that the cinders arrive in an unfrozen state. But should the occasion arise whereby you do make use of this information, then we will, at least, be glad to have been of some small service to you.

Yours very truly,
Foreston Coal Company, Inc.
Arnold L. Sabin, Manager
Cinder Department

Otis H. Walker, owner and operator of the Concrete Products Company, Junction City, Kan., has been elected president of the Junction City Chamber of Commerce.

Sakrete Makers Report Outstanding Meeting At Mississippi Resort

The producers of Sakrete (sacked dry concrete and mortar mixes) held their annual meeting on February 9 and 10, 1951, at the Edgewater Gulf Hotel, Edgewater Park, Miss. The attendance was excellent, producers coming from all parts of the country, many of them bringing their wives and families. They were treated to a well-rounded and instructive program, and good weather also made it possible to enjoy the many diversions which this top-flight resort hotel affords. Arthur C. Avril, president of Sakrete Incorporated, licensor, who planned this meeting, is to be congratulated on his choice of location and program.

Much of the time was devoted to a discussion of advertising and merchandising methods. Each producer briefly described his practices, and under the guidance of Mr. Avril there was considerable discussion of cooperative national advertising. The various forms of advertising discussed included national magazines, trade papers, classified telephone directories, newspapers, radio, television, matchbooks, etc.

The main feature of the program was a talk by Robert Howe, instructor in civil engineering at the University of Cincinnati. His services have been made available to Sakrete Incorporated under a contract which was entered into with the university. Under this contract the university provides its facilities and personnel for the development of new products and the solution of technical problems presented by Sakrete Incorporated. This research service is one of the many benefits made available to manufacturers who are licensed by Sakrete Incorporated to produce Sakrete products.

Mr. Howe discussed the advantages of a new material on which he was working, and also demonstrated its superior qualities over and above a good grade of concrete. He actually made beam tests, compression tests, and tension tests comparing the new material to standard Sakrete products. The new material proved to be about five times stronger flexurally, twice as strong in straight tension, and about twice as strong in compression. The samples tested at the meeting were 7-day samples, and Mr. Howe indicated that his tests showed

Arthur C. Avril

that a better differential could be expected with samples cured for a longer period of time. In addition to making these three standard tests, he also made impact tests by allowing a 1¼-lb. steel ball to strike a ½-in. thick sample from a height of 18 in. Standard concrete shattered in 5 to 6 blows, whereas the new concrete material withstood 50 blows with no sign of cracking or shattering.

It is anticipated by Sakrete Incorporated that this new material will be made available for production by its licensees within the next year.

Cairo, Ill., R.M.C. Firm Gets Power Plant Order—60,000 Yds. of Concrete

A Cairo, Ill., firm, the Stephens Ready Mix Concrete Company, has been awarded a contract to furnish all the concrete for the Electric Energy, Inc., power plant at Joppa, Ill.

Approximately 60,000 yards of concrete will be needed for installing the boilers, generators, and pumps, and for foundations. This amount will require approximately 350,000 bags of cement, 40,000 tons of stone, and 30,000 tons of sand.

Stephens Ready Mix Concrete Co. recently furnished 12,000 yards of concrete for the reconditioning of the Illinois Central Railroad bridge at Cairo and 5,000 yards to the Corps of Engineers, Memphis district, for a new sea wall, also at Cairo.

Edgar M. Stephens is owner of the plant and also president of Edgar Stephens & Sons, Inc., general contractors. In charge at Joppa will be Thomas D. Burns, general manager of the concrete plant.

Meihaus Succeeds Snowden As Texcrete's President

George A. Meihaus was recently elected president of the Texcrete Company of Dallas and Fort Worth, Tex. Mr. Meihaus, who was formerly executive vice-president of the firm, succeeds James H. Snowden, now chairman of the board.

In his new post Mr. Meihaus will have charge of sales and advertising for the company, which manufactures and sells haydite masonry units. He is also president of the Texas Concrete Masonry Association.

Concrete Firm's Subsidiary To Open Plant at Aiken, S. C.

According to an announcement released by officers of the Southeastern Concrete Company, which recently opened a plant at Aiken, S. C., the Southeastern Sand and Gravel Company, Inc., a subsidiary of the former, will soon begin operating a plant about 4 miles north of Aiken.

The new plant will produce and ship sand within a radius of 50 miles by rail and truck, in addition to serving the concrete block plant and the immediate area. W. R. Carson is president of both companies.

A new ready-mixed concrete firm, Metropolis Ready-Mix, has begun operations in Metropolis, Ill. Employing seven men and operating a fleet of mixing trucks, the company is serving the Metropolis-Brookport-Joppa area with ready-mixed concrete. Leon B. Stilley and Roy T. Vineyard are partners in the business and Jack Evans is manager.

Stice and Sons Buy Back Colorado Pre-Mix Company

H. E. Stice of Denver, Colo., and his sons, Maurice, M. H., and Stanley, and Albert J. Gould recently repurchased the Colorado Pre-Mix Concrete Company, which Mr. Stice sold last May to R. B. Millay and I. A. Rendle.

Under the present management the following officers head the company: M. H. Stice, president; Stanley E. Stice, vice-president and treasurer; A. J. Gould, secretary; H. E. Stice, manager.

Asbestone Corp. Erecting Branch Plant at St. Louis

Asbestone Corporation, New Orleans, La., has started erecting its first branch plant on a 29-acre site in St. Louis. The plant will manufacture concrete siding shingles and flat wallboard using a wet machine process. The one-machine unit will have an annual capacity of 400,000 squares of siding.

A 500- by 120-ft. one-story building will be erected. 125 persons will be employed on a $350,000 annual payroll. The plant and equipment represent an investment of $750,000, and annual production value will be $2,500,000.

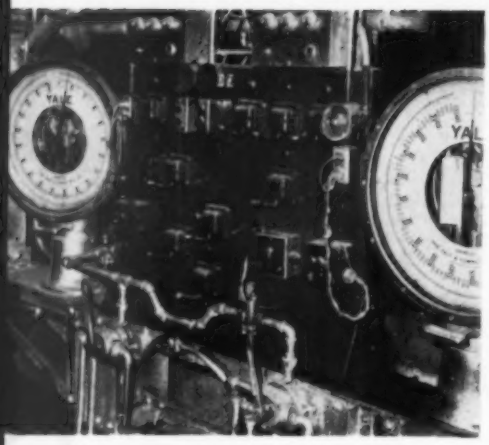
Truck Dealer Takes Over Assembling Job on Big Order

At Wichita, Kan., the Walt Keeler Concrete Company, Inc., has received the first four of 21 White transit-mix trucks ordered recently.

When the White Truck Company informed the concrete firm that delivery of the trucks was impossible because of heavy production schedules, the C. E. Jones White Truck Sales Company in Wichita undertook the task of assembling the truck units at the rate of five per month. The first unit required 90 days; the fourth was completed after seven days.

Fourth Concrete Plant Of Clifton Coal & Supply Company Nears Completion

Three-Mixer Brookpark Road Plant Has Two Calcium Chloride Dispensers



• Above: A view of the central control panel showing the scales for weighing aggregate and cement, and the regulator used to control amount of calcium chloride solution per batch of concrete.

• Above: Close-up view of the calcium chloride solution running into the concrete mixer. Below: A view of the dissolving tank that holds calcium chloride solution. Air agitated solution is pumped from tank to gravity storage tank on upper floor.

CLIFTON Coal and Supply Company, Lakewood, O., has already supplied more than 30,000 cubic yards of concrete for the construction of the new Ford Motor Company production foundry and motor plant near Cleveland's airport.

Supplying concrete for large construction projects is routine work for Clifton Coal and Supply—they have been in operation in Cleveland for about 25 years. In order to supply the Ford job efficiently, they built what will be the largest of their four branch plants when it is completed—the three-mixer Brookpark Road plant, almost adjacent to the Ford job.

Concrete pouring started from the Brookpark plant for the Ford job in July, 1950, and already about 35 percent of the total 90,000 cubic yards of concrete necessary for completion of this construction has been poured. Final concrete for the job will be poured this summer; the plant and foundry are scheduled for operation in August this year.

The buildings of the plant and foundry, estimated to cost about 80 million dollars will be spread over an area of 200 acres. The combined plant and foundry will employ about 10,000 workers. The motor plant alone will cover an area of almost two million square feet.

The Brookpark branch plant of Clifton Coal and Supply is the only one of its type in Cleveland and one of the largest of its type in the U. S. Its trucks carry a wet-mix concrete direct from the plant to the job.

At present 60 to 70 percent of the total plant output is poured at the Ford job. The plant has three mixers, each of 2 cu. yd. capacity. George Goetz, Clifton Coal and Supply Company's president, says, "We use trucks that are rated at 3-cu. yd. capacity, but with a wet-mix we can put four cubic yards in them. This gives us the advantage of being able to pour more concrete, faster." On one day last November the Brookpark plant supplied a total of 1,039½ cubic yards of concrete to the Ford job—setting a new record for daily total production for any of their branch plants.

The Brookpark plant has had in operation for more than two months one of the new J. W. Materials Company's calcium chloride dispensers. Recently a second dispenser of this type was put into operation. The superintendent of the Brookpark plant stated, "This new dispenser makes it easier for us to add calcium chloride, in solution form, to our concrete. The easily adjustable timing device of the dispenser enables us to get uniform amounts of calcium chloride in each batch."

The company uses 2 percent calcium chloride by weight of cement in solution form. The solution is made up by dissolving flake calcium chloride in water in a large drum; it is stirred by means of air pressure through a pipe inside the bottom of the tank. Holes in the pipe are drilled so that forced air moves toward the top of the tank, thereby affording maximum agitation and faster dissolving of the calcium chloride.

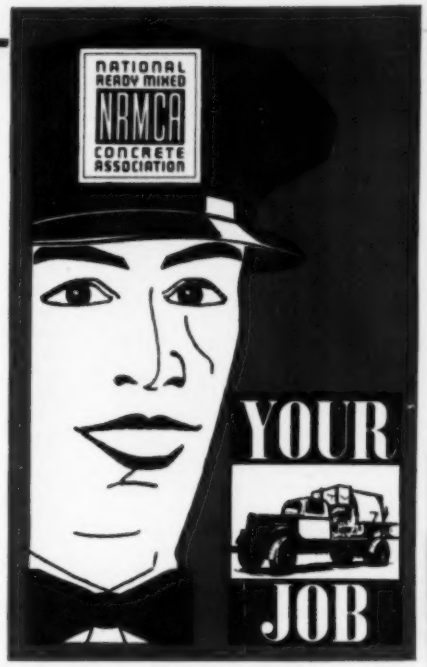
The solution is piped from this tank to two dispenser units located two floors above in positions that permit gravity flow of the solution to the mixer units on the floor directly below them. The man in charge of the mixer units controls the flow of the calcium chloride into mixers by setting a timing device on the central control board. Thus batches of concrete can be given uniform or varied amounts of calcium chloride solution. To further assure that each batch gets the specific desired amount, air pressure is used to push the solution through the pipe that carries it from the second story dispenser unit to the mixers.

According to Joseph Spilka, mixer operator, calcium chloride is used in all concrete batches that leave the plant during cold weather periods, to assist in obtaining proper strength gain.

Ready-Mixed Concrete

Driver's Manual

N. R. M. C. A. makes helpful booklet available to both members and non-members

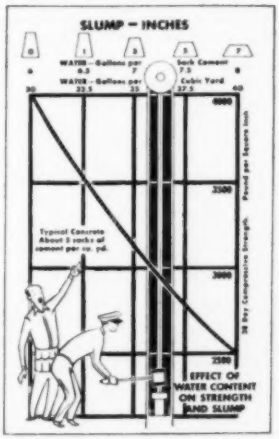


THE result of almost a year's work by a special committee, a new booklet entitled *Your Job* (above, right) is now obtainable from the National Ready Mixed Concrete Association. Designed as a driver's manual, this attractive, two-color booklet is available in quantity to both members and non-members of the association. It contains a great deal of information which every ready-mix delivery driver should have at his finger tips at all times. It covers subjects such as care of the truck, mixing transit-mix concrete, mixing central-mix concrete, the importance of pleasing the customer, general driver duties, what to do in case of accidents, safe driving techniques, and many more.

One of the chief features of this booklet is its flexibility of make-up, so that it can be "tailor made" for every individual company. Several of the pages in the booklet are printed on one side only, so that each company can type or print on the other side special information which it might wish drivers to have (for example: wage rates, vacations, insurance, etc.). It is also possible to have a company name printed on the booklet.

These booklets are available to members at the following rates: 25 copies or less, $1.00 each; 26 to 100 copies, 90 cents each; over 100 copies, 75 cents each. Non-members may obtain them at double these rates. This charge yields the N.R.M.C.A. only slightly more than out-of-pocket cost and provides a reserve for reprinting and revising as the occasion requires. Further information may be obtained by writing the National Ready Mixed Concrete Association, 1325 E Street, N.W., Washington 4, D. C.

• Pictured below are three representative pages from the new ready-mixed concrete driver's manual prepared by the N.R.M.C.A.



another ON THE SPOT report

BLOCK PRODUCER

By HAROLD R. DRIMILLA

LESS than 10 miles from the heart of Cincinnati proper on U. S. Highway 25-42 as it passes through the suburb of Reading, a 12- by 36-ft. concrete block sign marks, or rather acclaims, the location of Reading Concrete Products, Inc.—"Home of Reading Rock". Reflectors mounted in concrete block housings illuminate the brightly-painted letters at night, and a concrete block mailbox displays the street number. All blocks, except those forming the display portion of the sign, are painted white, giving vivid contrast to the well-kept plot of lawn along the road.

The one-way drive, which serves as an entrance, leads to one of the most progressive, as well as one of the most unusual, concrete masonry plants in the country. The modern office building and the plant are painted white and the grounds are kept in a condition as closely approaching the immaculate as is possible in a block producing operation. The office building is a concrete block, two-story structure with operational offices and an employees' room on the first floor. A four-room efficiency apartment on the second floor is occupied by the company's president, R. E. Francis. The interior of the apartment follows modern trends, plaster having been applied directly over the block and then papered. As pointed out by Mr. Francis, windows on all sides permit him to watch all operations from his living quarters, if he so chooses. The exterior has been waterproofed with Vikote plastic solution.

President Francis is the reverse of a swivel chair executive, for in addition to carrying out the functions of plant superintendent, foreman or serving in any other supervisory capacity, he is a machinery designer, inventor, mechanic, and plumber. He does his own welding and machinery repair and adjustment. Since the death of his wife somewhat less than a decade ago, he has made his business a full-time hobby and the success he now enjoys he attributes in great part to her early help.

Under its present set up, the plant is producing in excess of 2,400 8-in. blocks per hour, using a Besser Special 6 Vibrapac and a Super Vibrapac. The hourly turn-out of the former is 1,440 blocks, while that of the latter is 1,080. Brick is produced three days per month, using the Super Vibrapac, during which time approximately 180,000 units are produced. Lintel is manufactured at the rate of one every two minutes with a company-built machine which is also used to make highway guard rail posts.

About 90 percent of the block produced is sand and gravel, the other 10 percent being cinder and Amlite. Aggregate for the former is trucked in from the Ohio Gravel Company, 6 miles east of Reading, using two International K-8 16-ton tandem trucks. Cinder, purchased from the Cinder Supply Co. of Cincinnati and Amlite from the American Aggregate Corporation of Hamilton, O., are hauled in with the same trucks.

Cement is received in bulk and is stored in a 500-bbl. capacity C. S. Johnson bin fed by a 200-bbl.-per-hour bucket elevator operating through an Allen Bradley control box and Westinghouse switches. C.

• Sign at the entrance of Reading Concrete Products, Inc., constructed of concrete block and lighted with floodlights and a black light system which is one of the first such systems used in Cincinnati.

• Reading Concrete Products truck fleet lined up before the plant. All of the delivery trucks are painted the same color and bear the same design.

EXTRAORDINARY

Reading Concrete Products, Inc., sparked by a president who has mastered the business, ranks among the nation's most progressive plants.

• R. E. Francis of Reading Concrete Products, the "president who has mastered the business."

S. Johnson traveling weigh batchers feed the cement to the mixers. Two Hough Payloaders with ¼-cu. yd. buckets are used alternately to feed aggregate.

Pending delivery of a 70-cu. ft. mixer, the Special 6 Vibrapac uses a 50-cu. ft. Besser unit driven by a 50-hp. Reliance electric motor at 32 r.p.m. A second Besser 50-cu. ft. mixer adequately handles the needs of the Super Vibrapac. It is likewise driven by a 30-hp. Reliance motor at 26 r.p.m.

Both block machines are skip-hoist loaded and are equipped with automatic pallet return. The Special 6 and the Super Vibrapac use magnetic-hook pneumatic offbearers to load 6 blocks and 4 blocks per cycle, respectively, into the racks. The offbearers are powered by a 40-cu. ft. per hour Quincy compressor driven by a 10-hp. Reliance motor. Racks were supplied by the Chase Foundry and Manufacturing Company. Power for plant operations is commercially supplied, being stepped down to 220 v. and distributed through a Bull Dog control panel.

Blocks are cured for approximately 16 hours in 7- by 13- by 35-ft. steam kilns. Ten such kilns, with a capacity for about 13,000 blocks are housed in a separate wing of the plant. A drive-through accommodates traffic to the block machines at one end and yard storage at the other. Universal Door Carrier Uni-Temp all-aluminum doors seal the kilns, all of which have dial thermometors to assure equal distribution of heat. In addition, one kiln is equipped with a recording thermometer for testing purposes. Heat is brought up to the desired temperature, after which it is turned off to allow the blocks to soak until removal time. In the interest of avoiding heat losses and to prevent cooling of the kilns between loads, no exhaust fans are used. Steam is supplied by an 60-hp. oil-burning Cyclotherm steam generator, with a 30-hp. Dutton upright boiler standing in reserve. All plumbing and the boiler and related equipment were installed by Mr. Francis.

Four Towmeter LT 60 lift trucks, two of which are equipped with side shifters, handle block haulage. Two are used in the curing and yard storage cycle, the others in loading trucks for delivery.

Cured blocks are hand cubed in four tiers with 60 to the cube for a total of 240 at each individual placement. These are placed in storage squares of about 60,000 to 65,000 blocks along the one-way drive through the plant grounds, with truck entrances at regular intervals to facilitate loading. The 2-acre yard area accommodates storage for about 400,000 standard 8-in. equivalents.

Four International K-8 and three L-180 flat bed trucks are used for delivery. The former have a capacity of from 600 to 800 blocks and the latter hold 250 to 350. These, plus materials hauling and utility units, comprise the fleet of 11 trucks operated by the company. Radius of delivery is approximately 35 miles, including Greater Cincinnati, Hamilton, Middletown and Lebanon.

An interesting block development by Mr. Francis is now being successfully marketed under the name of Plaza brick. He derived his idea from the ribbon course brick construction used in the new Terrace Plaza Hotel in Cincinnati. This style is simulated by scoring the block after it has been completely cured. It is virtually impossible to discern between the finished block and brick laid in this manner. It is claimed that a block mason can lay 300 8- by 8- by 16-in. Plaza bricks per day, which is equivalent to 3,600 2¼- by 3⅝- by 7⅝-in. brick per day. Available in line block patterns of 4 or 6 bricks and a 6-brick half-block pattern for use at openings and corners, they can be supplied in either sand-and-gravel or cinder units in modular increments of 4, 8, 12 and 16 in. A large stock is not kept on hand, since scoring can be done as orders are received. Emphasizing the fact that the pattern is embedded in the block and is not a facing, company advertising points to substantial savings in materials, mortar and labor costs.

• The block machine which makes six 8-in. equivalents on one pallet at the rate of four pallets per minute.

• This machine (with a front-end pallet return) makes three 8-in. units on one pallet.

• Curing kilns are numbered for the rotation in which kilns are filled, so that they may be unloaded in the same order. Note the all-aluminum doors.

The machine used for scoring is a two-man device with an 8-hour capacity for 3,000 blocks and can be used for cutting fractionals. Having designed and built it, Mr. Francis has applied for patent rights. The machine is at present being manufactured by the General Tool and Engineering Company of Reading, O.

The lintel machine on which Mr. Francis has also applied for patent rights is another achievement to his credit. He built and designed the original without the aid of plans or blueprints. Installed in the Spring of 1949, it is operated by two hydraulic cylinders and is vibrated under pressure with two Syntron V-200 vibrators. Models with additions and refinements are being manufactured by General Tool and Engineering.

The machine is a versatile piece of equipment on which lintel and highway guard rail posts can be made in any length up to 9 ft., in heights of 4, 6, and 8 in. and 8 in. wide. Machines now being built will manufacture lintel and guard rail posts up to 10 ft. long by 8 in. wide and, in addition, will turn out concrete slabs up to 10 ft. by 24 in., including sizes adapted for use as stepping stones.

Most of the firm's sales are made through local building materials suppliers. A large amount of advertising is nevertheless carried on through spot radio announcements, displays at home shows, on-the-job signs, truck posters and signs, pamphlets, and mailing pieces. "The Home of Reading Rock" is the company byword.

Operations were commenced in the Spring of 1947, using a single-block tamper with a capacity of 1,800 units per day. This was replaced in 1948 with the Super Vibrapac, which increased daily output to over 6,000 units. The Special 6 Vibrapac, which has upped production to its present figure, was installed in July, 1950.

At present 15 men are employed to carry out operations at the plant and office, plus 11 truck drivers.

University of Missouri Holds Better Concrete Conference

A Better Concrete Conference, planned by the engineering extension service of the University of Missouri, was held on the Columbia, Mo., campus on February 20 and 21. Ray F. Powell, president of Concrete, Inc., of St. Louis, one of the principal speakers, addressed the conference on *Quality Required in Better Concrete*.

Other conference speakers included representatives of the university's engineering staff, the Chicago research and development laboratories of the Portland Cement Association, the Missouri State Highway Department, and several manufacturers of ready-mixed concrete. Plans have been made to make the conference an annual affair.

Concrete Pipe Handbook Available to Industry

A recent addition to the literature on concrete pipe is the *Concrete Pipe Handbook*, prepared by Howard F. Peckworth, managing director, American Concrete Pipe Association. The 383-page volume, with A.S.T.M. specifications C-14, C75, and C76 and A.A.S.H.O. specifications M86, M87, M41, and T33 appended, contains engineering data and technical information concerning pipe which is not readily available and which has never before been published in one book.

Typical subjects covered are the sections on how concrete pipe is manufactured; concrete pipe specifications and tests, recommended minimum depths of cover; loads on underground concrete conduits; hydraulic coefficients of flow; jacking reinforced concrete pipelines; and other relevant topics.

Dozens of photographs illustrate the manufacture, installation, and uses of concrete pipe. There are also many line drawings, graphs, and sketches. An entire chapter is devoted to related data sheets and tables.

Copies of the *Concrete Pipe Handbook* are available through local concrete pipe manufacturers. Engineers and consumers of concrete pipe may secure single copies from the American Concrete Pipe Association, 228 N. LaSalle Street, Chicago, Ill., at $4 each.

Ralph Brand and Ralph Lockhart are the new owners of the Auburn Concrete Products Company at Auburn, Ind. The business and facilities were formerly the property of George Simanton and A. L. Hooker.

Block and Silo Plant Lost In Blaze at New Paris, Ind.

Lightning struck the plant of the Eureka Silo and Block Company near New Paris, Ind., on March 3 and started a fire which destroyed the building. Since the blaze began at 5:30 a. m., it was out of control when local firemen reached the plant. However, they managed to save the company's records and to prevent the destruction of two dry-kilns near the main building. All of the firm's equipment was lost.

William Neff, manager and co-owner, stated that the loss will run to about $20,000. Other members of the firm are Dewayne Johns, Mrs. Ora Bingham, and Clarence Byler.

Howard W. Jordan, president of the Metropolitan Sand and Gravel Corporation of Port Washington, New York, has announced the appointment of Homer Hogmire, formerly of Island Transit Mix, to the post of general manager of Metropolitan's new concrete plant in Nassau County. The plant, now under construction, will be located at Kinkle Street near Old Country Road in Westbury, and will open in the near future.

Paturzo Installs Modern Bulk Handling Plant For Cement

Pumps used for distribution to storage bins, Airslides for conveying to weigh scales

By WILLIAM M. AVERY

another ON THE SPOT report

ONE of the outstanding block-making establishments now operating is the plant of V. Paturzo Bro. & Son, Inc., at Baltimore, Md., where five high-production automatic machines turn out daily (and in one shift) about 47,000 8-in. equivalents. This tremendous production is actually achieved with three separate, fully independent block making plants located on a fine 14-acre industrial site.

When the fifth production unit came under consideration about a year ago, the company faced some rather serious problems in connection with the handling of portland cement. Up until that time all cement had been handled in bags, but several factors appeared to urge the adoption of bulk handling.

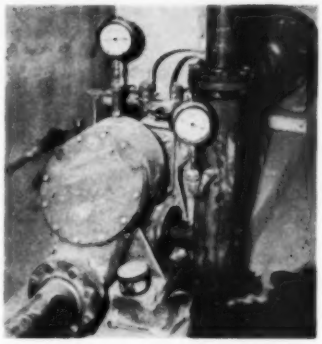
After prolonged and careful study it was decided to install a single Fuller-Kinyon conveying system to serve all three plants, and to utilize Fuller-Huron Airslides for controlled conveying of cement from storage bins serving each plant to the weigh scales over the various batch mixers. The result is a cement-handling system which is undoubtedly unique in the block industry, and which from the standpoint of efficiency and convenience it would be difficult indeed to improve upon.

The general layout of the system is shown on the line drawing on page 154. It consists of a Type L-6 Fuller-Kinyon pump located in a concrete pit directly below the tracks of the rail siding on which cement is received. This unit, which has a capacity of 200 bbls. per hour, is

• V. Paturzo, founder of the business which bears his name.

• This aerial view of the Paturzo plant in Baltimore, Md., shows the production buildings with extensive storage yards in the background.

• Above left: Sam Paturzo and Bruno Serra, general superintendent. Above: Hopper-bottom cars discharge cement directly into pump located in pit beneath the tracks. Building at right houses the rotary compressor. At right: A view of the pump which is located directly under the tracks.



served by a Type C-110 Fuller rotary compressor located in an adjoining above-grade room adjacent to the siding.

The 5-in. pipe line from the pumping unit runs underground to a valve pit where manually-operated diverting valves direct the flow of cement to any one of the three storage points. The three conveying lines (respectively 390, 350, and 250 feet, in length) remain entirely underground until they reach points adjacent to the various storage bins, where they rise vertically and discharge through long-radius bends directly into the bins.

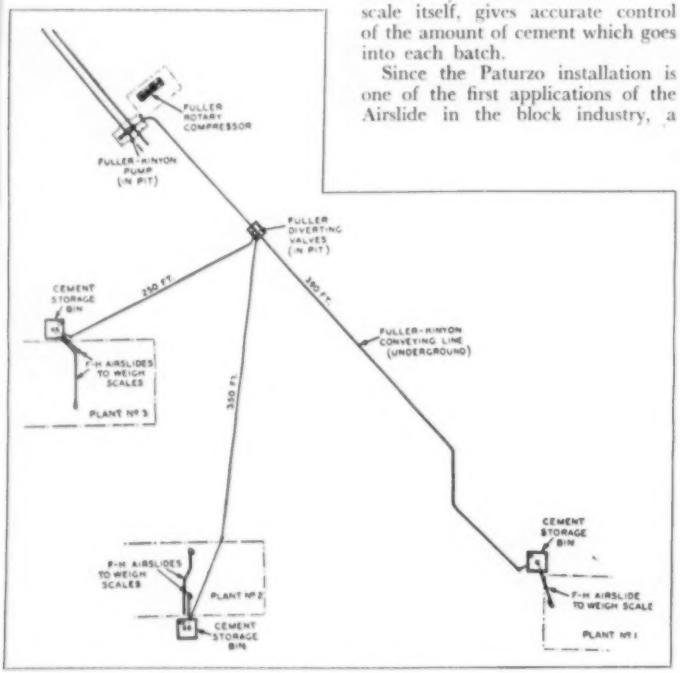
Each of the three plants has its separate cement storage bin, plants No. 1 and No. 3 each being served by a 400-bbl. Blaw-Knox bin, and plant No. 2 by a 600-bbl. bin of the same make. These bins were installed at the same time as the cement handling system. Cement is withdrawn from the bottom of each bin by means of F-H Airfeeders. These discharge into the enclosed Airslides, in which the material, fluidized by aeration, flows by gravity down a relatively flat incline. Each Airslide terminates above a weigh scale, where an air motor-operated cut-off gate, actuated by a mercury switch located on the scale itself, gives accurate control of the amount of cement which goes into each batch.

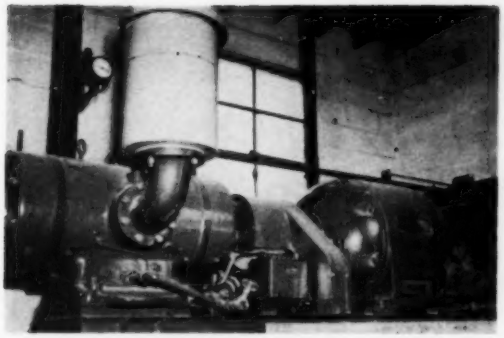
Since the Paturzo installation is one of the first applications of the Airslide in the block industry, a brief description of the device is presented here. It is actually a gravity conveyor in which the material to be moved is fluidized by passing low-pressure air through a slightly inclined porous medium. The porous medium consists of a fabric which is about equivalent to 6- or 8-ply canvas power transmission belting, so woven as to have a uniform, but relatively high, resistance to air flow.

The air chamber, or lower half of the conveyor, is a trough-shaped sheet-metal duct to which the fabric is cemented and clamped. The material-conveying channel is formed by an inverted trough which is bolted to the lower half of the unit. Air is admitted to the air chamber at any point in its length through conventional duct work connected to the discharge of a small blower, which may serve just one conveyor or a battery. The required inclination varies from about 4 degrees for free-flowing materials (such as portland cement), to as much as 8 degrees for some extremely fine materials which tend to agglomerate on a relatively flat surface, as well as for rather coarse materials.

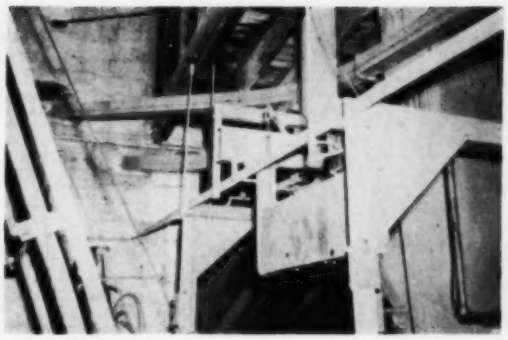
One of the impressive advantages of Airslides is the ease with which they may be designed to avoid obstacles. The use of alternate straight and curved sections results in almost complete freedom of location, subject only to headroom re-

• General layout of the pumping system.





• The rotary compressor which supplies air for the entire pumping system.



• Airslides from inside machine room. Lower unit terminates at weigh scale shown, while upper Airslide runs to another out of camera range.

quirements. From a maintenance point of view the low horsepower requirements, absence of moving parts, and dustless operation are also important advantages.

The Fuller-Kinyon system and the Airslides at the Paturzo plant handle close to 3,500 bbls. of cement per week. The entire system can be operated by one man, since the pump, the compressor, and the diverting valves are all located within a relatively small orbit. A mercury switch located inside each bin turns on an electric light to warn the operator when the bin is full.

The five Besser Super Vibrapac block machines in the Paturzo plant produce about 47,000 8- by 8- by 16-in. equivalents per single-shift day. With the exception of one machine, located in the original plant building, aggregates for all the production units are supplied from ground-level storage bins. Proportioning and blending are done by means of mercury switches which automatically stop the various belt conveyors when a predetermined amount of each material has been batched out. This system has the self-evident advantage of placing full responsibility upon supervision, since the operators are not permitted to make changes in the settings.

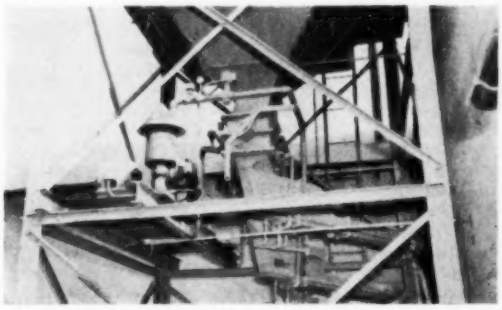
Practically all production is cubed after the units leave the curing rooms, and the cubes are handled with lift trucks equipped with Schmidgall forks. Since it is not at all uncommon for the company to ship as many as 60,000 units in a single day, it is considered impractical to operate a large enough fleet of lift trucks to load out cubes. Outgoing delivery trucks are therefore loaded by hand from the cubed storage piles.

The storage yard, which has paved "express" runways to facilitate the movement of lift trucks, will accommodate upwards of 1½ million 8-in. equivalents piled two cubes high. This tremendous storage capacity makes it possible to cure units in storage for at least 10 days before they are shipped.

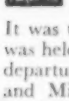
The Paturzo organization today employs about 40 individuals, including 6 men who are constantly engaged in the production of lintels and other "specials." Each of the three plants has a superintendent, and in addition there is a general superintendent and a yard superintendent. Overall direction of the company's extensive operations is under the direction of Sam Paturzo, but his father, V. Paturzo, who founded the company, still visits the plant each day, and takes a keen interest in all phases of the business.

• At right: A view of the 400-bbl. bin which serves plant No. 1. Cement enters the bin through a vertical pipe, is discharged through Airslide below bin, or through gravity pipe (at right) which supplies the lintel plant.

• Arrangement of blower, feeders, and Airslides below one of the storage bins is shown below, with Airslides passing through wall of plant building into machine room.



American Concrete Institute Holds Banner Convention In San Francisco



THE American Concrete Institute broke with tradition by holding its annual meeting at San Francisco on February 20 through 22. It was the first time this convention was held on the West Coast, but the departure from meeting in the East and Midwest was logical, as California has a larger membership in the institute than any other state. The result was highly satisfactory in point of good attendance, excellent program, and high interest throughout the sessions. The registration was 572, which has been exceeded only twice in the last ten years. All sessions were at the St. Francis Hotel.

The "Western hospitality" of the energetic local committee, headed by Prof. Harmer E. Davis of the University of California, Berkeley, also provided for an unusual amount of evening entertainment. A banquet was arranged at which all attending the convention were guests of the committee. On other evening there was a bus trip through Chinatown, and a two-hour boat trip around the Bay at twilight was another feature. These events introduced a delightful social atmosphere.

Frank H. Jackson, Washington, D. C., retiring president of A.C.I.

Officers The new president of the A.C.I., elected for one year and installed during this convention, is Harry F. Thomson, Material Service Corporation, Chicago. Mr. Thomson has been a leader and pioneer in the development of ready-mixed concrete. For many years he was associated with the General Material Company in St. Louis, ultimately as president of the company. In 1949 he was retained by Material Service to take over-all charge of their extensive operations in ready-mix, which was then being organized to serve the Chicago area. He was first named to the board of directors of A.C.I. in 1939, and has been vice-president during the last two years. He has made a number of contributions to the *Journal*, and is this year's winner of the Wason Medal for the most meritorious paper. He is a former president of the National Ready-Mixed Concrete Association and a former national director of the American Society of Civil Engineers.

Henry L. Kennedy, Dewey & Almy Company, Cambridge, Mass., was installed as vice-president for two years. He served as a director from 1944 to 1949. He is the author of several papers in the *Journal*, and has been active in technical committee work. A. T. Goldbeck, engineering director, National Crushed Stone Association, Washington, will also serve as vice-president during the second of a two-year term.

New directors, each to serve 3-year terms, are: Frank Kerekes, Iowa State College, Ames, Ia.; G. L. Lindsay, Universal Atlas Cement Company, New York City; I. E. Morris, consultant, Atlanta, Ga.; Walter H. Price, U. S. Bureau of Reclamation, Denver, Colo.

Business Meeting Consideration of proposed changes in the A.C.I.'s widely-recognized Standards was the first order of business at the opening on Tuesday forenoon, February 20, at which Frank H. Jackson, Washington, D. C., institute president, presided. Dean Frank Kerekes, Iowa State College, chairman of the Building Code Committee, presented the report of that committee, which recommended increasing the allowable bond stresses for the new type of deformed bars (known as A.S.T.M. A-305 bars) over those previously allowed for the old types, and also the elimination of hooks for the new-type bars. It was emphasized that these changes, when recognized by local building codes, would result in important economies in reinforced concrete construction.

President Harry F. Thomson, Material Service Corporation, Chicago.

The proposed revision of the A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures was presented by R. C. Reece, Toledo, O., chairman of that committee. These changes in bar designation and in drawings would bring the Manual into agreement with the bar designations, and the new bond values and anchorage details for the new-type deformed bars. A. T. Goldbeck presented proposed revisions of *Specifications for Concrete Pavements and Bases*, covering matters of air-entrainment, removal of forms, premolded joint fillers and joint filling materials, placement of reinforcement, and preparation of soil foundation. The meeting authorized the submission of the recommendations of these three committees to the institute membership for letter-ballot.

A Proposed Recommended Practice for the Application of Mortar by Pneumatic Pressure, covering the mixing and placing of "shotcrete" and the preparation of the surface of such work, was presented by R. B.

Young, Toronto, Ont. This proposal was ordered to letter-ballot.

The circumstances which prompted the institute's board of directors to recommend changes in the by-laws which would accomplish an increase in dues were outlined briefly by H. F. Thomson. Under this proposal the dues of individual members would be changed from $12.50 to $15.00 per year. The board has considered such increase necessary for maintenance of the current services to the membership under the advancing level of costs. These proposed changes were ordered submitted for letter-ballot.

The session was concluded with a paper by W. H. Price, Denver, Colo., on *Factors Influencing Concrete Strength*. The relative effects of type of cement, mix proportions, availability of moisture for curing, and curing temperature were the topics discussed. It was suggested that many engineers are not cognizant of the influence of some of these factors. Information was given on the variation in strength which might be expected on a typical job.

Design Sessions The chairman of the afternoon session was Prof. Harmer E. Davis; the general topic was design. Stewart Mitchell, Sacramento, Calif., outlined the considerations of the California Department of Public Works in designing cast in-place and precast prestressed types of bridges. In particular, the paper described the design and construction of a new footbridge over the flood channel beside the Arroyo Seco Parkway in Los Angeles, in which prestressed girders with 125-ft. clear span were used.

G. L. Lindsay, Universal Atlas Cement Co., New York, N. Y., new director.

California practice for *Prevention of Joint Trouble in Concrete Pavements* was outlined by T. N. Hveem, also of Sacramento. The sequence of events leading to pumping and subsequent failure of a concrete road slab were described.

During the evening, although a number of meetings of technical committees were held, a large party of the convention attendants took a sightseeing bus trip through the famous Chinatown section and up the equally famous Nob Hill.

On the morning of February 21 two concurrent sessions were held. At the first, devoted to design, Past-president H. G. Gilkey, Iowa State College, served as chairman; at the second, devoted to materials and properties, the chairman was Vice-president A. T. Goldbeck. During the design session, Dean Kerekes presented a paper by I. E. Morris on *Getting More for Our Concrete Dollar*, which pointed out economies in flat slab construction. L. G. Far-

A. T. Goldbeck, vice-president of American Concrete Institute.

rant, Miami, Fla., described his own experience and that of W. C. Harry, also of Miami, in the *Design and Construction of Flat Plate Parking Garages*. J. P. Michalos, Iowa State College, discussed the *Effect of Lateral Loads on Arches*. A paper by W. T. Walker, Bureau of Reclamation, on *Spaced and Tied Reinforcing Bar Splices*, which was abstracted by Douglas McHenry, also of the Bureau, reported tests which indicated no important loss of bond when deformed bars are tied together at splices.

H. L. Kennedy, Dewey & Almy Company, Cambridge, Mass., vice-president for the next two years.

Materials Session At the materials session a paper on *Soniscope Tests* by E. A. Whitehurst, Purdue University, and presented by I. L. Tyler, Chicago, reported measuring the quality of concrete by sound waves passing through as much as 50 ft. of a structure. R. W. Burrows, Bureau of Reclamation, reported on tests at the Bureau on cements of different coarseness, which indicated that the coarse-ground made more durable concrete; the universality of this conclusion was questioned during the subsequent floor discussion. H. W. Brewer, also of the Bureau of Reclamation, spoke on the topic, *Entrained Air Simplifies Winter Curing*, citing tests which indicated that the amount of winter protection can be reduced when air-entraining concrete is used. R. F. Blanks, Bureau of Reclamation and past-president of the institute, spoke on *False Set in Portland Cement*, suggesting that premature stiffening is influenced by the temperature of grinding the cement. In a paper on *Alkali-Aggregate Expansion Inhibitors*, W. J. McCoy, Lehigh Portland Cement Company, reported tests in which the addition of small quantities of copper and lithium salts had largely affected the expansion of opal aggregate in concrete mixed with high-alkali cement.

Awards At the luncheon which followed President Jackson made formal presentation of the following awards:

Charles S. Whitney, New York and Milwaukee, received the Lindau

award in recognition of his many contributions to reinforced concrete design practice. This was only the second time this award has been made.

Harry F. Thomson received the Wason Medal for the "most meritorious paper" in the last volume of the *Journal* for his paper on the topic, *Specifications Should Be Realistic*.

J. R. Leslie and W. J. Cheesman, both of Toronto, received the Wason Medal for "noteworthy research", for their paper on *An Ultrasonic Method of Studying Deterioration in Concrete Structures*.

W. S. Colby, Boston, received the Construction Practice Award for his paper on *Design and Construction of a Circulating Water Intake*.

President Jackson also announced the election to honorary membership of Harrison E. Gonnerman, Portland Cement Association, and Prof. Frank E. Richart, University of Illinois. As neither was present, A. Allen Bates represented Mr. Gonnerman and Prof. Raymond E. Davis represented Prof. Richart in receiving the certificates.

In his retiring address, President Jackson reviewed the functioning of the American Concrete Institute as the clearing house for advances in design and practices in the field of cement and concrete. He cited the practical character of the institute's work, as indicated by the Building Code, which is now accepted by most large cities as the basis of their regulations regarding concrete construction. Another contribution to practices is the recently-issued *Detailing Manual*, which has been adopted widely by engineering schools and design offices as standard procedure. Mr. Jackson concluded that the A.C.I. is in a healthy condition, and is justified in anticipating continued support from concrete men to continue its level of services.

Precast Session Concurrent sessions were again held in the afternoon. Vice-president Thomson served as chairman of the session devoted to precast concrete. Three papers comprising a symposium on recent advances in the design and application of precast members were as follows. *Advances in Precast Floor Systems* by Prof. F. N. Menefee, University of Michigan; *Precast Structural Elements* by A. G. Streblow, Napa, Calif.; and *Precast Concrete Construction* by Otto Safir, Vancouver, B. C. These papers indicated a growing application of precast units to complicated types of structures. *Precast Concrete as Protection Against Atomic Blast* was discussed by A. Amirikian, Washington, D. C., who offered suggestions for the construction of small bomb-shelters which might be built in or adjacent to residences. F. T. Collins, San Gabriel, Calif., spoke on *Tilt-Up Construction* and showed moving pictures of recent work of this type in the Southwest. Another movie on *Prestressed Concrete* presented by J. P. Janney, Chicago showed tests to destruction of a large pre-cast beam. His running remarks interpreted the preliminary make-ready and the instrument recordings during the test.

Construction Session The chairman of the concurrent session on construction was President Jackson. In a paper on *Finishing and Curing*, Myron A. Swayze, New York City, described the effect of time of finishing and curing on surface durability to freezing and thawing, and offered suggested procedures adapted to the ambient conditions and to the hydration needs of the cement. H. Walter Hughes, Rochester, N. Y., discussed the special techniques in bonding, screening, and finishing used in topping concrete roads with thin layers of concrete. He also showed a new movie taken by the Eastman Kodak Company showing operations on construction projects in their extensive plants. Some unusual problems in design and construction of architectural concrete were described by Michael Goodman, Berkeley, Calif. *Economy of Lightweight Monolithic Concrete Construction*, using expanded shale concrete, was discussed by J. A. Murlin, Dallas, Tex. H. H. Roberts, Mill City Ore., closed the session with a description of the *Aggregate Cooling Plant* used to maintain proper temperatures in the 1,500,000 cu. yds. of concrete placed in the Detroit Dam.

In the evening all attending the convention were guests of the San Francisco Convention Committee at a dinner party in the St. Francis Hotel, at which Chairman Davis of the Convention presided. It was understood that this entertainment feature was arranged with the compliments of the "cement, concrete, and building industry of the Far West". It was a delightful occasion.

Research Session The annual open session of the Research Committee was held on Thursday morning, February 22. Prof. S. J. Chamberlain, Iowa State College, chairman of the committee, presided, assisted by G. W. Washa, University of Wisconsin, secretary. Progress reports were made on ten research projects concerning concrete which are under way at four leading engineering schools and several agencies, including the National Sand and Gravel Association, Waterways Experiment Station, Washington Department of Highways, National Bureau of Standards, and others. The projects covered a wide range, including bond-slip curves under axial tension, prestressed thin beams, determining air in hardened concrete, electrical heating of concrete pavements, thermal differences in aggregates, and the use of isotopes in studying the properties of concrete. Reports on some of these investigations are expected to be available for publication soon, but work on others will not be concluded for some time.

Panel In the afternoon the final session of the convention took the form of a panel discussion of various topics concerning concrete which correspondence had shown to be of special interest. Prof. Chas. H. Scholer, Kansas State College, served as moderator, assisted by Prof. R. E. Davis, University of California. The panel of "specialists" was composed of leading technicians from across the country, including Messrs. Amirikian, Blanks, Gilkey, Goldbeck, Kelley, Kennedy, Stanton, Swayze, Tremper, Tuthill, and Tyler. Many of the topics evoked spirited discussion among the panel, with an occasional difference of opinion. The informal discussion led by men who are recognized as leaders in various branches of the concrete field appeared to be popular with the attentive audience.

That evening a large party took a two-hour cruise around San Francisco Bay, which had been arranged by the Convention Committee. Prominent features such as the Oakland-Bay Bridge, the Golden Gate Bridge, and Alcatraz Island were viewed close at hand. As the boat passed the Golden Gate, the sun, looking like a golden ball, was obligingly sinking below the western horizon. The spectacle gave confirmation to the statement of incoming President Thomson when he said in closing the final session that this first convention of the A.C.I. on the Pacific Coast had been very successful.

J. Frank Norris, a manufacturer of cast concrete building stone known as Norristone, died on February 2 at his home in Rochester, N. Y. He was 78 years of age.

Ready-Mix Producers Hold 21st Convention At New Orleans

Record Attendance Set For Non-Exhibit Year

another ON THE SPOT report

MEETING at the Roosevelt Hotel in New Orleans the week of February 12, the National Ready Mixed Concrete Association set a new off-year attendance record at its 21st annual convention. Close to 1,300 producers of ready-mixed concrete and sand and gravel registered for the combined meetings of the two allied associations.

As in past years, sessions of the two organizations were combined whenever the subject matter was considered of equal interest to members of both groups. In general the combined sessions are reported in greatest detail under the heading of the National Sand and Gravel Association in the April issue of PIT AND QUARRY. The accompanying report therefore covers only those subjects which are judged to be of most direct and immediate interest to producers of ready-mixed concrete.

President's Address At the joint opening meeting on Tuesday a.m., February 13, William Moore (J. P. O'Connell Company, Boston, Mass.), president of the National Ready Mixed Concrete Assn. made his address. He pointed out that no businessman or business alone can keep up with and interpret correctly all the new developments in operations, controls, legislation, etc., a phase of business which is becoming more important each year. The association's staff does most of this, the most difficult part, for members. Only the largest corporations, he said, can afford to maintain staffs of experts to do for them what the members of N.R.M.C.A. get for their low membership fee. Membership is an investment, not an expense. Mr. Moore then reviewed briefly the importance of the work being done by the association and re-emphasized the importance of having experienced and intelligent guidance in these times.

The ready-mix industry, said Mr. Moore, became seasoned during World War II and is ready for any problems which may come up. He emphasized rather heavily the shortage of cement in the industry during 1950, which he believed was due at least partly to unfair distribution by the cement industry. The ready-mix industry, he said, used about 40 million bbls. of cement in 1950 and is now the largest single user.

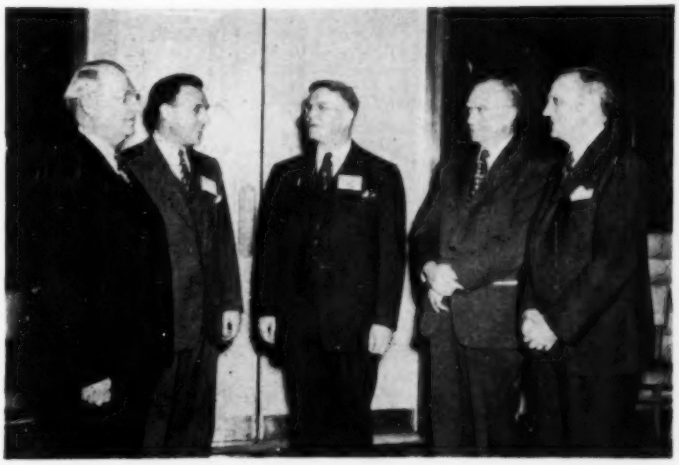
Mr. Moore commented on the local meetings held during the year which have made possible more intelligent discussion of localized problems not feasible at national meetings. The survey on group insurance showed, he said, that many producers are interested and the association will go ahead with its plan.

It was pointed out that the association continued its rapid growth in 1950. It now has 435 members and 62 associate members. Of these, he said, 92 and 8, respectively, were new in 1950. In closing Mr. Moore expressed his appreciation of the cooperation received during his year of office from both the staff and the membership.

Coming Conventions The boards of directors of N.R.M.C.A. and N.S.G.A. at their annual meetings on Monday, February 12, voted to hold their next board meetings at The Greenbrier, White Sulphur Springs, W. Va., October 1, 2 and 3, 1951. No plans have been made for the 1952 mid-summer board meeting but it was announced that the period August 27-30 is available at Banff, Alberta.

The original plans for the 1952 annual convention and machinery exposition had called for consecutive weeks in cooperation with the National Crushed Stone Association and the Agricultural Limestone Institute late in February and early in March at the Stevens Hotel, Chicago. Many members of the associations and of the Manufacturers' Division objected to this, as the late date would keep some operating men from attending. It was announced that a single week was open at the Stevens in January, 1952, and both boards voted to hold the convention then, independently of N.C.S.A. and A.L.I.

It was announced at this meeting that the 1953 joint convention of N.S.G.A. and N.R.M.C.A. was still scheduled for San Francisco at the



Left to right: Harris N. Snyder, president of the National Sand and Gravel Association; Norman J. Fredericks, newly-elected president of the National Ready Mixed Concrete Association; William Moore, retiring president of the ready-mix association; and Stanton Walker and Vincent P. Ahearn, respectively director of engineering and executive secretary of both N.R.M.C.A. and N.S.G.A.

Del Bloom of the association staff was kept busy at the blackboard during the clinic on calculating concrete proportions.

Fairmont Hotel but that there was some doubt whether the weather would be suitable early in February. The boards decided to investigate the possibility of a later date. Definite scheduling of the 1954 convention and exposition, tentatively slated for Cleveland, was held open in order to study a very persuasive invitation to hold it early in January in Miami. At that time off-season hotel rates are still in effect and new facilities recently completed will ideally take care of conventions and exhibits of any size.

Executive Secretary In making his annual report to the joint meeting of the two associations on Tuesday morning, Vincent P. Ahearn, executive secretary, stated that the value of the combined output of these industries in 1950 was from $650,000,000 to $700,000,000. The associations' estimate for ready-mixed concrete is 32,000,000 cu. yds., valued at about $325,000,000 and requiring about 40,000,000 bbls. of cement. Some, he said, believe the actual totals to be nearer 40,000,000 cu. yds., $400,000,000 and 50,000,000 bbls.

Mr. Ahearn indicated that the railroad car shortage would be with us for at least two more years and that the number of trucks available to the industry or to those industries serving it would probably be curtailed. He pointed out that we are entering this emergency in a record civilian boom period with no reservoir of labor to draw from and that we must compete with other industries for whatever help the armed forces leave us. He predicted drastic shortages of steel, copper, aluminum, and other critical materials. He also urged members of the industry not to hesitate in asking for price increases when they are justified. In concluding, he pointed out that the N.R.M.C.A. now has 442 active members and 62 associate members.

Report of Engineering Director Stanton Walker, director of engineering for both associations, reported on the work done during the year and the investigations under way or planned for this year. He stated that the new laboratory has been even further equipped and referred to articles in the trade press for further details (see PIT AND QUARRY, April, 1950, pp. 62-66). He then gave a brief resume of some of the types of research being done and in closing mentioned two new publications for the ready-mix industry. They are *Recommended Practices for Sampling and Testing Ready Mixed Concrete* and a booklet entitled *Your Job*. The latter, he said, represented the completion of a project started in 1949 to prepare a driver's manual.

Adequate Highway Programs Robert J. Potts, former president of N.S. G.A. (1930-31) and now a member of the Texas Highway Commission, spoke at the Tuesday morning joint session on "The Urgency of Adequate Highway Programs." He reviewed the history of road-building in this country from the first participation by the government 34 years ago. For some years federal support grew with the needs, but by 1930, he said, the needs of traffic had far outstripped the highway system, and this condition has become worse every year. Mr. Potts cited many authorities who showed that unless we begin to make up for past defections and expand our highway building program at once, we will find ourselves with an inadequate highway system in case of a national emergency.

Robert Mitchell, presiding at the final session, presented the Pit and Quarry Safety Awards to three class winners: left—Class A Safety Award to Fort Worth Sand & Gravel Co., Fort Worth, Tex., represented by L. W. Dunn; center—Class B Safety Award to Kuert Concrete, Inc., South Bend, Ind., represented by J. B. Christman Jr.; and right, Class C Safety Award to Fyfe Cement and Supply Co., Amarillo, Tex., represented by Charles E. Fyfe Jr.

Joint Luncheon The speaker at the joint luncheon of the N.S.G.A. and N.R.M.C.A. on Tuesday was De Lesseps S. Morrison, the vigorous young mayor of New Orleans, who has made a national reputation for himself by cleaning out crime and otherwise improving that city. He described a municipal development program now in progress consisting of parks, playgrounds, slum clearance, housing, boulevards, grade crossing elimination, a new Union Station, etc. Private capital is going along with the program with considerable housing and industrial construction. There were, said Mayor Morrison, building permits worth $92,000,000 issued in 1950, about eight times the total in recent years. The Union Station and affiliated programs alone eliminate 122 of the 144 railway grade crossings in New Orleans. A series of slides illustrated the variety and scope of the work being done which will make New Orleans a modern metropolis without, it is hoped, eliminating much of its historic charm.

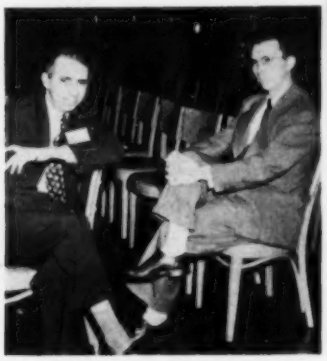
J. A. Nicholson, Nicholson Concrete Co., Toledo, O., and J. B. Christman Jr., Kuert Concrete, Inc., South Bend, Ind.

G. C. Beld, Peerless Cement Corp., Detroit, Mich., and C. P. Shaw, Superior Cement Div., New York Coal Sales Co., Portsmouth, Ohio.

Taxation and Accounting The joint open forum on taxation and cost accounting on Tuesday afternoon was presided over by John W. Murphy (Central Pre-Mix Concrete Company, Spokane, Wash.), assisted by Vincent P. Ahearn, executive secretary and Charles A. Horsky, legal counsel for both associations. The subject of taxation was quickly disposed of—taxes are on the way up, and the transportation tax is here for a long stay. Accelerated depreciation for new emergency facilities is hard to get, but the association will furnish application forms if desired. Both industries have been exempted from renegotia-

Walter A. Thomas, Acme Concrete, Inc., Stoneham, Mass., and R. Edward Storms, Concrete Materials, Inc., Morristown, Tenn.

Harry M. Graff and Richard E. Ridenour, both of Portsmouth Mixed Concrete, Inc., Portsmouth, O.



T. P. Struble Jr., Dravo Corp., Pittsburgh, Pa., and Fred F. Bartel, Tews Lime and Cement Co., Milwaukee, Wis.

Left to right: Joseph A. Kurtz, Concrete Transport Mixer Co., St. Louis, Mo.; Charles E. Fyfe Jr., Fyfe Concrete & Supply Co., Amarillo, Tex.; and John F. Van Way, Concrete Transport Mixer Co.

T. H. Fleming, Concrete Transport Mixer Co., St. Louis, Mo., Stanton Walker; and Robert F. Moss, Scientific Concrete Service Corp., Elizabeth, N. J.

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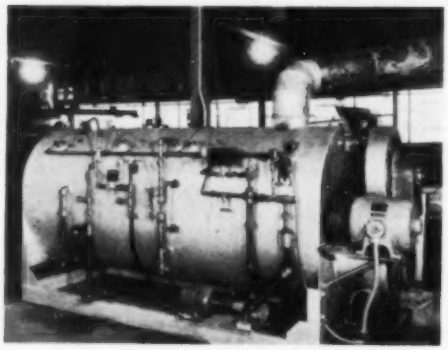

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tion, but a new act may require reapplication.

The cost practices of his company were described by L. M. McCandless (Turner Gravel Company, San Antonio, Tex.), who said that in their bookkeeping practices they were already doing the basic work required to determine costs, so that little additional trouble was necessary to determine them accurately. The first step is to determine what information is of most importance to the management. This information should then be presented in as concise a form as possible. Mr. McCandless' system is to keep detailed cost records on all phases of operation from the cost of the materials used through the delivery of the product. These figures are combined into monthly and annual reports. These show, he said, important trends and also make it possible to determine whether or not individual trucks and accounts are showing a profit.

The subject of depreciation practices aroused considerable interest and discussion and disclosed a wide variation in the practices of the ready-mixed concrete producers present. For income tax purposes most producers depreciate their trucks and mixers in five years, their steel batch plant buildings and their batching equipment in 10 years, and their boilers in 10 to 12 years.

At this meeting the importance of checking up on cement was emphasized. One producer said that he had been losing nearly a carload of cement per month until he started checking everything from the receipt of the cement to the delivery of the concrete into the mixer. Now the loss is only 2 or 3 bags out of each 1,000 received.

Employee Relations The open forum on employee relations and related federal statutes was held Wednesday afternoon and was presided over by Norman J. Fredericks (Koenig Coal & Supply Company, Detroit, Mich.). Mr. Fredericks stated that group insurance is becoming more important to employer-employee relations and that the association is making it available to those companies that want it. Each company makes its own decision on how the insurance will be paid for. There was a 65 percent return on the questionnaire sent out, and most of those replying already had some type of plan. One company having such a plan charges each employee $0.60 per month regardless of age, and this averages about one-third the total cost. The

company thus pays an average of $1.20 per man, although in the case of older employees the payment ranges up to $9.00 per month.

Vincent P. Ahearn, executive secretary, said that the quality of the industry's labor agreements is improving, but that many companies still have bad agreements. In one case an agreement gives the company no right to discuss grievances directly with an employee. He urged that producers do everything possible to break down the wall some unions have built between them and their employees. He also stated that exclusive seniority means laying off the youngest (in terms of service) and rehiring the oldest employees. The tendency now is to give the older employee preference only when he at least equals a younger employee in ability, merit, and physical fitness.

Charles A. Horsky, legal counsel, said that provisions of the Wage and Hour law were redefined in 1950. The problem of how to compute overtime is still with us, but most of the former shortcomings have been taken care of. The basic principles of the Taft-Hartley Act are now probably permanent law, although some minor changes may be made.

Operating Problems An open forum on operating problems dealt with such diverse subjects as overloading, mixer blade wear, admixtures, the handling of lightweight concrete, and the maintenance of uniform air content. The panel for this session included Robert F. Porter, Harry T. Campbell Sons' Corporation, Glenn C. Cook, American Builders Supply Company, D. D. Reynolds, Boston Sand & Gravel Company, E. B. Rayburn, Ready Mixed Concrete Corporation, Fred Bartel, Tews Lime & Cement Company, and Arthur A. Levison, Blaw-Knox Company. Herbert G. Jahncke, Jahncke Service, Inc., presided at this session.

In regard to mixing time, the panel seemed to agree that overloading can be compensated for in some measure by allowing more revolutions of the mixer drum. It was brought out, however, that increasing the speed of the drum is likely to reduce the quality of the concrete.

The subject of cement balls was brought into the discussion, and various producers commented briefly on their experience with this problem. One of the members of the panel stated that the best preventive measure is to add mixing water very slowly.

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In a brief discussion of mixer blade wear it was noted that there are no real criteria for determining when worn blades should be replaced. It was suggested, however, that when the edges of the blades wear down about 2 in., it is desirable to replace them.

Several points were brought out in a discussion of air entrainment, and of the problem of controlling the amount of air. Among the factors mentioned which appear to affect the amount of air entrained were length of haul, speed of drum, total time of mixing, grading of sand, amount of cement, and the consistency of the mix. It seemed the consensus that in a well-controlled plant the best results can be obtained by using an admixture for entraining air. In the absence of effective control, however, the panel seemed to feel that air-entraining cements have some advantage. Stanton Walker reminded producers that each 1 percent addition of air to concrete reduces its strength about 5 percent unless the air is compensated for in the batch weights.

Maximum Pay Load J. W. Bauman, vice-president of the White Motor Company, and H. F. G. Pelsue, general sales engineer of the Jaeger Machine Company, presented independent papers discussing the problem of distributing truck mixer loads to secure maximum pay loads consistent with legal limitations on axle loads. It was pointed out that in almost all the states higher loads are permitted on front axles than it is actually practical to obtain, and that for this reason it is desirable to place mixers as far forward as possible. In effecting this shift in center of gravity, both speakers agreed that the entire front-end design of the unit must be considered in order to prevent loss of traction, impairment of steering, and other difficulties.

Several questions were raised concerning power steering, and the following facts were brought out. Power steering should receive serious consideration when front axle loads exceed 9,000 lbs., especially when poor footing conditions are likely to be encountered. The inclusion of power steering adds about 100 lbs. to the total weight of a unit, and increases the cost by approximately $600. It is entirely practical to apply power steering to existing trucks.

As a part of his presentation Mr. Bauman described a program which the White Motor Co. has launched in an all-out effort to service their vehicles during the present emergency. As outlined by the speaker, the program will include exhaustive service requirement analyses for units in service, the preparation of a metal tag for each unit showing its service requirements, and the publication of monthly bulletins on parts availability and general maintenance problems.

Election Of Officers The new president of the National Ready Mixed Concrete Association for 1951 is Norman J. Fredericks (Koenig Coal & Supply Company, Detroit, Mich.). Richard K. Humphries (Pacific Coast Aggregates, Inc., San Francisco, Calif.) is vice-president; Robert C. Collins (The Warner Company, Philadelphia, Pa.) is secretary; and Herbert G. Jahncke (Jahncke Service, Inc., New Orleans, La.) is treasurer.

Members of the board of directors, in addition to the above are: Walter H. Acheson (Somers-Barr Co., Inc., Urbana, Ill.), Robert S. Barneyback (Henry J. Kaiser Co., Oakland, Calif.), Henry J. Brown (The Cook & Brown Lime Co., Oshkosh, Wis.), John B. Donovan (Valentine Concrete Co., Inc., Springfield, Mass.), Arthur J. Egan (new) (Ready Mixed Concrete Co., Minneapolis, Minn.), Walter M. Keeler

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Barney F. Devine (Chain Belt Co.), as chairman of the Truck Mixer Manufacturers' Bureau, represents it on the board.

Also ex-officio members of the board are past-presidents who are still active members of the association. These are: Harry F. Thomson (Material Service Corp., Chicago, Ill.), Joseph L. Shiely (Guaranteed Concrete Co., St. Paul, Minn.), James F. McCracken (American Builders Supply Co., Louisville, Ky.), H. F. Garvin Pelsue (The Jaeger Machine Co., Columbus, O.), Stephen Stepanian (The Arrow Sand and Gravel Co., Columbus, O.), Alexander Foster Jr., (The Warner Co., Philadelphia, Pa.), Charles W. Shirey (C. W. Shirey Co., Waterloo, Ia.), Frank P. Spratlen Jr. (Ready Mixed Concrete Co., Denver, Colo.), Robert F. Porter (Harry T. Campbell Sons' Corp., Towson, Md.), and William Moore (J. P. O'Connell Co., Boston, Mass.).

Safety Award: The awarding of safety trophies for the 1949-50 National Ready Mixed Concrete Assn. Safety Contest was made by Robert S. Mitchell (Consolidated Rock Products Co., Los Angeles). In discussing the attitude of his company toward safety he said that the human angle is the first consideration; the improvement of public relations, greater income for the employees and the company, and lower insurance rates are secondary considerations. Mr. Mitchell said that more plants competed than ever before, but that the entire membership should be entered.

Mr. Mitchell then awarded the

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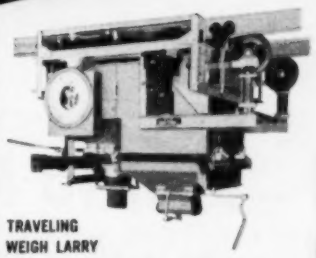
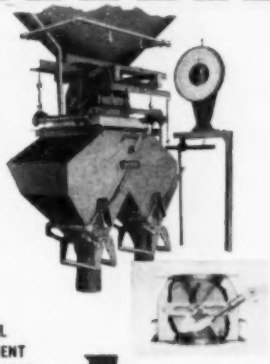
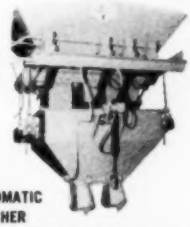
● Heltzel batchers exemplify the advanced engineering that is incorporated in **all the details** of Heltzel batching plants. Heltzel manufactures ten types of batchers specifically designed for faster, more accurate batching. Portable aggregate or cement plants, combination cement-aggregate plants, or circulating bulk cement plants — whichever you require, Heltzel affords you more value for each operating dollar.



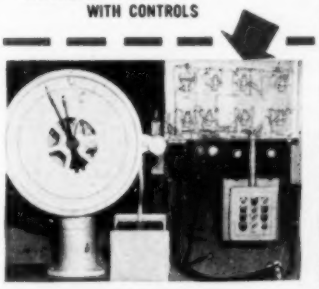
TRAVELING WEIGH LARRY

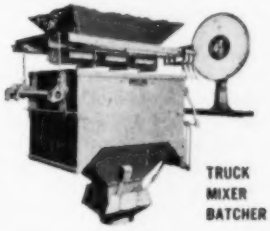


DUAL CEMENT BATCHER WITH TUBULAR CEMENT VALVE



AUTOMATIC BATCHER WITH CONTROLS





TRUCK MIXER BATCHER

HELTZEL

STEEL FORM & IRON CO.

WARREN, OHIO

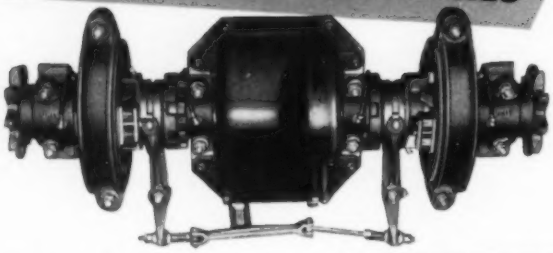
trophies, which are furnished by PIT AND QUARRY, to the winners in each of the three size groups. The winner in Class A—100,000 cu. yds. or more—was the Fort Worth Sand & Gravel Co., Inc., Fort Worth, Tex. The trophy was accepted by L. W. Dunn of that company, who attributed success to the safety-mindedness of the company from the top down, plus luck. The trophy for Class B—50,000 to 100,000 cu. yds.—was won by Kuert Concrete, Inc., South Bend, Ind., for the second time. J. B. Christman Jr. of that company accepted the award and stated that his men work safely largely because they like to receive their pay checks regularly. The winner in Class C—50,000 cu. yds. or less—was the Fyfe Cement & Supply Co., Amarillo, Tex. Charles E. Fyfe Jr. said that his firm's employees are told that when hurry interferes with safety to "cut out the hurry." A record total of 27 other ready-mixed concrete plants won the N.R.M.C.A. Safety Certificate awards for having accident-free records during the year.

Cement Supply The president of the Marquette Cement Manufacturing Company of Chicago, W. A. Wecker, spoke to the Thursday afternoon session of the ready-mix group about the present problems and probable prospects of the cement industry. Addressing his audience as an individual observer and not as a spokesman for the cement industry, Mr. Wecker began his interesting and informative talk by "giving the cement supply situation in 1950 a little going over." The accusations and table pounding that followed the lack of full supply for the demand was understandable, he said, but it must not be overlooked that shortages do not always develop because of shortsightedness of the producer, and neither can additional capacity be turned on overnight. "The fact is," he continued, "while you and our industry were going through those tight situations last year, our industry was in the process of feverishly working to complete a total capacity increase of well over 12,000,000 bbls. per year."

"Much of the tremendous demand in the last half of 1950," Mr. Wecker noted, "came about by reason of the announced intention of

1 of 10 Reasons Why UNIT is a Better Machine

Automatic TRACTION BRAKES



All UNIT crawler-type machines are equipped with Automatic Traction Brakes. This exclusive UNIT feature is an internal expanding, friction-type locking device for both crawlers. Engaged and released automatically, it provides traction lock without the necessity of manual control. Here is positive braking power in either direction of travel — holds fast, even on steep grades, without creeping. Steering is done by single lever control. Brakes can be re-lined without dismantling brake-shoes or drums — linings slide in-or-out in a matter of minutes. Lower traction gears are completely enclosed, running in a constant bath of oil — protection against abrasive wear.

The UNIT 1020A-¾ YD. machine is built to give wear resisting, peak performance at low maintenance and operating cost. Extra long crawlers, wider axles and shoes, plus additional counterweight, provide perfect balance and all-around stability.

This is the 4th of a series of ten ads describing outstanding UNIT features.

UNIT CRANE & SHOVEL CORPORATION
6401 W. Burnham Street, Milwaukee 14, Wisconsin, U. S. A.

Crawler and Mobile models — ½ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

UNIT

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

A 5898-½ I-C

M-K Lime Process wins OK of Concrete Producers

The patented MILLER-KOMLINE Process of producing superior lime putty makes the Ready Mixed Brick Mortar market available for ready-mix concrete operators.

Product requires no aging, and is ready for use right after slaking. Can be mixed with sand and Portland cement and delivered via transit mix trucks.

Inventors will design and erect plants, and install apparatus on *exclusive patent license.*

Mat of processed lime putty being carried over outrigger roller of M-K machine by helical springs.

Write for Full Details

MILLER - KOMLINE CORP.
Sole Licensees of M-K Process
PEAPACK, NEW JERSEY
Durando Miller Thomas R. Komline

the Federal Government to restrict credit for home building and from an anticipation of federal restrictions on construction in many other classes." This certainly isn't normal or regular development, he believes, and the industry as a whole feels badly about the scramble that occurred and is determined to get on top of the demand whatever the cause may be. "In fact," he continued, "the situation last year may well overstimulate the cement producers and cause them to overbuild."

Referring to commitments by suppliers to ready-mix producers, Mr. Wecker stated that the crux of the matter was not how many cement companies offered to commit themselves for future delivery, but the *extent* of such commitments.

Mr. Wecker noted that discussing last year's demands, and what the cement industry has done in the way of adding capacity, still leaves unanswered the question of whether still more capacity is needed. "Whether or not it will be needed," he added, "much more capacity *will* come into being in 1951. Four entirely new plants to serve growing areas are being built at present and several others are reported to be under consideration. Further capacity is also being added at many existing plants. I interpret from a recent survey conducted by PIT AND QUARRY magazine that a total of about 12,000,000 bbls. of additional capacity will come into being in 1951. You may not agree with me but my view is that all of this 12,000,000 bbls. of new capacity, on top of the 12,000,000 which came into being last year, may not be needed in the immediate future, even assuming growth in the proportion of concrete going into total construction and maintenance work."

Referring to local difficulties in matching cement supply and demand, Mr. Wecker noted that rail transportation difficulties, including car supply, are frequently blamed for temporary shortages of cement. "That is true in a sense," he admitted, "but my observation is that the total cement shipped in a given year has never been affected materially by occasional shortages of cars. To say that car shortages sometimes cause construction work to be delayed temporarily is probably closer to a correct description of what takes place." It is generally true that the railroads provide the best facilities for transporting a heavy commodity such as concrete, Mr. Wecker pointed out, and the self-unloading hopper car with its

93,000 Users of Ready-Mixed Concrete

are constantly reminded to "look for the rating plate." It is even more important to you to insist on this plate on every truck mixer or agitator you buy.

(Advertisement below is being read by your best customers in Architectural Record, Engineering News-Record and Western Construction.)

Quick answer to a $300,000,000 question

3 CUBIC YARD MIXER
GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
NRMCA
4 1 CUBIC YARD AGITATOR
N.R.M.C.A. REGISTERED

How can you know whether the truck mixers that serve your jobs have the accuracy of water control, design and speed of drum and full amount of free mixing space needed to properly mix the concrete they deliver?

You simply look for this standard rating plate.

The Bureau rating plate is available to all manufacturers who meet its quality standards and requirements.

To the construction industry, which uses more than $300,000,000 worth of ready-mixed concrete a year, this rating plate gives indispensable protection against questionable concrete from non-standard truck mixers. Insist on it, when you approve or buy concrete ready-mixed.

Truck Mixer Manufacturers Bureau

BLAW-KNOX DIVISION, Pittsburgh, Pa.
CHAIN BELT COMPANY, Milwaukee, Wis.
CONCRETE TRANSPORT MIXER CO., St. Louis, Mo.
THE JAEGER MACHINE COMPANY, Columbus, Ohio
THE T. L. SMITH COMPANY, Milwaukee, Wis.
WORTHINGTON PUMP & MACHINERY CORP., Dunellen, N. J.

large capacity is a factor in keeping cement prices low. "Over 5,000 new hopper cars were added in 1949 and over 2,000 last year," he said. "For 1951 more than 4,000 are on order. By the end of the year nearly 27,000 such cars should be in service and that is almost 14,000 more than just three years before."

"Multiplicity of types of cements, including the air-entraining varieties, are also factors affecting local supply," Mr. Wecker continued. "They result in interruptions in the smooth continuing flow of cement to you producers of ready-mixed concrete. At the time you need it most, we may be out of the type you want because we are making some other type." The benefits to concrete, resulting from purposeful entrainment of air, have been dramatic, he said, "but the trouble is that there is no standard dosage of an air-entraining agent which will produce the exact results required in concrete under all conditions." The important point, he declared, is that ready-mix producers have the facilities at hand to bring about a properly controlled air content in the finished concrete. Many are doing this now, but there should be more, Mr. Wecker pointed out, for the advantages are manifold.

In referring to the cement pricing dilemma, Mr. Wecker said, "Most of you are well informed and keenly aware of what happens when you are compelled to purchase on a strictly f.o.b. plant price basis. You know now that generally it costs you more money for that portion of your requirements of cement which you cannot purchase from the closest sources. You know that generally your sources of supply are restricted and that you don't any longer have the freedom of choice you once enjoyed. We could quarrel, of course, with the legal need for all this and we could rant and rave about the injustice and inequity of it. But that would not alter the fact that it is with us and is likely to stay with us until the administrative agencies of our government admit flatly and unequivocally that delivered pricing is legal, or until Congress makes it manifest that such pricing is not to be prohibited."

"While talking about pricing," Mr. Wecker continued, "I can't refrain from doing a little boasting about cement prices. This is a 'plug' for the cement industry, to be sure, but I think you'll be able to take it, especially since it undoubtedly is a factor in increasing the volume of concrete used. Cement prices continue low. That is a fact despite the moderate upward movement that took place at the first of the year." Comparing the price increases of cement since 1926, Mr. Wecker noted that whereas cement stood at 136 in 1950, all other building materials combined stood at 205, and all commodities were at 160.

Concluding his address, the president of Marquette Cement Manufacturing Company said, "You are a big industry. In fact, in terms of dollar volume, you are not far behind us. You are destined to grow, and, as I see it, your growth will be influenced in direct ratio to the kind of service you render and to the quality you put into your product. In the final analysis it is quality concrete, and not the volume of business our industry enjoys from you, that lies at the base of the relationship between us."

John Klote, Cadillac, Mich., has been elected president of the newly organized Upper Peninsula Concrete Pipe Company, which will have headquarters at Escanaba, Mich. Other officers are Glen Winchester, vice-president; Lee D. Zimmerman, secretary; Robert W. Meyer, treasurer; and Lawrence Martin, superintendent.

COMPARE CHALLENGE truck mixers with any other major mixer...

ON YOUR OWN JOB

IN YOUR OWN PLANT

WITH YOUR OWN CREW

Challenge Truck Mixers are as far out in front in performance as they are in lighter weight, lower costs, and appearance. That is because the day of building a mixing unit to accomplish a general objective is long past. Challenge Mixers are designed and engineered to *improve* on every phase of operation, performance, quality of product, and costs...the greatest engineering advancement in mobile mixing equipment in cement history. If you have any doubt about the advantages of this modern, streamlined unit, you owe it to yourself to investigate... NOW!

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Please send complete information on Challenge Truck Mixers together with name and address of nearest Challenge dealer where we can arrange for demonstration.
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EXCLUSIVE NATIONAL DISTRIBUTORS FOR
CHALLENGE
the modern, streamlined truck mixers

MEMBER NATIONAL READY-MIXED CONCRETE ASSOCIATION

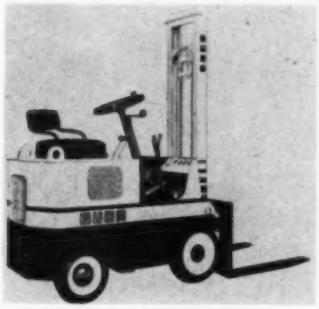
1815 N. Broadway, Los Angeles 31, Cal. Phone CApitol 2-9111

NEW MACHINERY and SUPPLIES

● Fork Lift Truck

Two new models of fork lift trucks, "FB20-24 and FB20-15", are being marketed by the Buda Company, Harvey, Ill.

These trucks are rated for 2,000-lb.



capacity. They are made in 24- and 15-in. load centers. Mast heights range from 65 in. to 83 in., and maximum lifts from 6 to 10 ft., depending on mast length. The width is 32 in. and the wheelbase 38-in., with a turning radius of 62¾ in. outside. Weights range from 3,500 lbs. to 4,100 lbs. Power is supplied by a 4-cylinder Waukesha engine with starter and voltage regulator. Lifting and tilting is by hydraulic cylinders with positive controls and limit stops. Forks are adjustable in width. These trucks, with their short length, are designed for shorter turns.

● Compression Tester

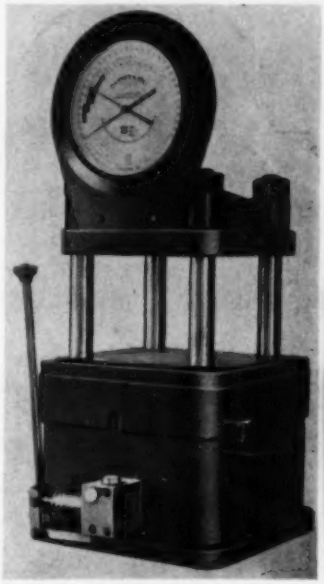
Daily compression tests are said to be possible with a compact, portable, rugged hydraulic press made by Forney's, Inc., New Castle, Pa. (See cut at right)

The machine features a direct reading pressure gauge, 12-in. diameter enclosed piston, self-aligning lower platen, and a dual high and low pressure pump.

The machine develops a ram pressure of 175 tons. The manufacturer claims that it will aid in meeting specifications for concrete products.

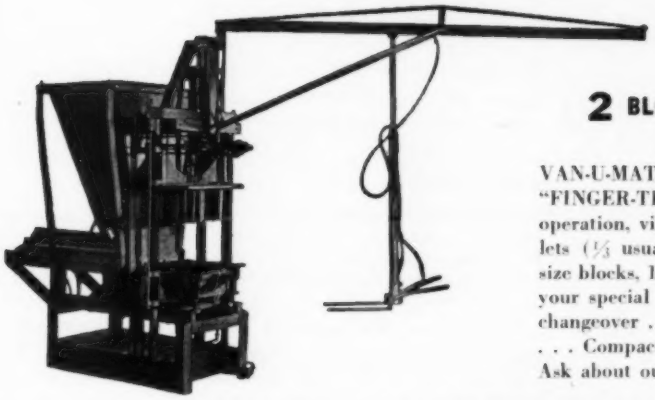
Cunningham-Ortmayer Company of Milwaukee has been appointed distributor for the C. S. Johnson Company of Champaign, Ill., in the Wisconsin area according to a recent announcement by A. J. Vincent, general manager. Products of this subsidiary of the Kochring Company of Milwaukee include a complete line of concrete-handling and cement-batching equipment.

Eli Schnapper has been appointed manager of sales coordination of the Building Products Division of L. Sonneborn Sons, Inc., New York 11, N. Y. He has been with the company for 30 years.



Announcing the New and Improved

VAN-U-MATIC BLOCK MACHINE



400 BLOCKS PER HOUR

2 BLOCKS IN 1 OPERATION

VAN-U-MATIC has ALL the features . . . "FINGER-TIP CONTROL" pneumatic power operation, vibration and off-bearer . . . Plain pallets (⅓ usual pallet investment) . . . Makes all size blocks, 16" or 18" lengths, modular sizes or to your special core requirements . . . Quick easy changeover . . . True dimensional, perfect blocks . . . Compact . . . Easy to install and clean. Ask about our new 3 unit machine.

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Fenton Construction Co. Troy, Ohio
G. W. Robertson Hillsdale, N. Y.
Robert-Burkham & Co. Valley Park, Missouri
Northeast Con. Prod. Northeast, Md.
DeAngelo Concrete Units Co. Philadelphia, Pa.
F. H. Yonks Chester, Pa.
Maysville Con. Prod. Maysville, Ky.
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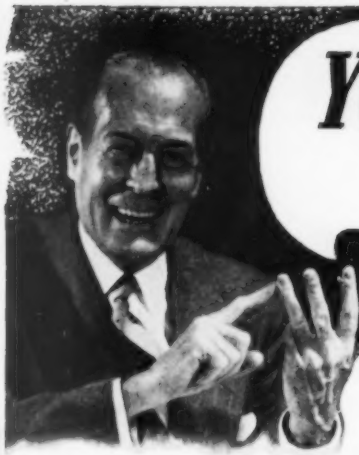
WESTMONT WELDING & MANUFACTURING COMPANY, INC.

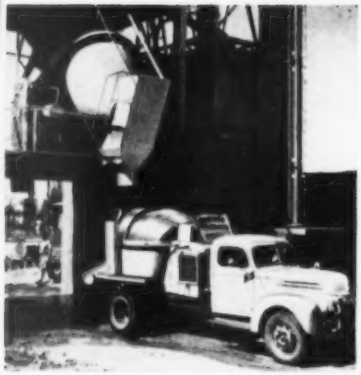
344 Haddon Ave., Phone COllingswood 5-4769 Westmont, New Jersey



YOU SAVE 3 Ways with Smith-Mobile LOADLIMIT models

MEET HIGHWAY WEIGHT LIMITS
with a Smith-Mobile LOADLIMIT Model. You can easily convert it to a Standard Smith-Mobile Truck Mixer or Agitator. And a Standard Model can easily be converted to a LOADLIMIT Model.

LOADLIMIT Models are available in 3, 4½, 5½ and 6½ yard sizes, with higher ratings for agitators. All carry NRMCA rating plates.



HERE'S a WINNING COMBINATION!
Smith Tilting Mixers and Smith-Mobile Agitators enable you to deliver better concrete with speed and certainty, at low cost. They have a record of achievement that has never been equaled in the industry.

1 **LOWER INITIAL COST** — By eliminating parts and units not absolutely vital to mixer operation, price of mixer is greatly reduced. A less expensive LOADLIMIT Model can be mounted on a lighter truck, resulting in a further saving in initial investment.

2 **LOWER OPERATING COSTS** — Less dead weight means bigger payloads without exceeding highway weight limits. A lightweight LOADLIMIT Model has less overall width, maneuvers more easily, travels faster. Discharge is easier since there is no closing door to open and close.

3 **LOWER MAINTENANCE COSTS** — Replacements and repairs are seldom necessary. A LOADLIMIT Model has the same sturdy construction as a Standard Smith-Mobile and carries the same guarantee. With unnecessary parts removed, there is less to maintain. The closing door is eliminated. No seal troubles.

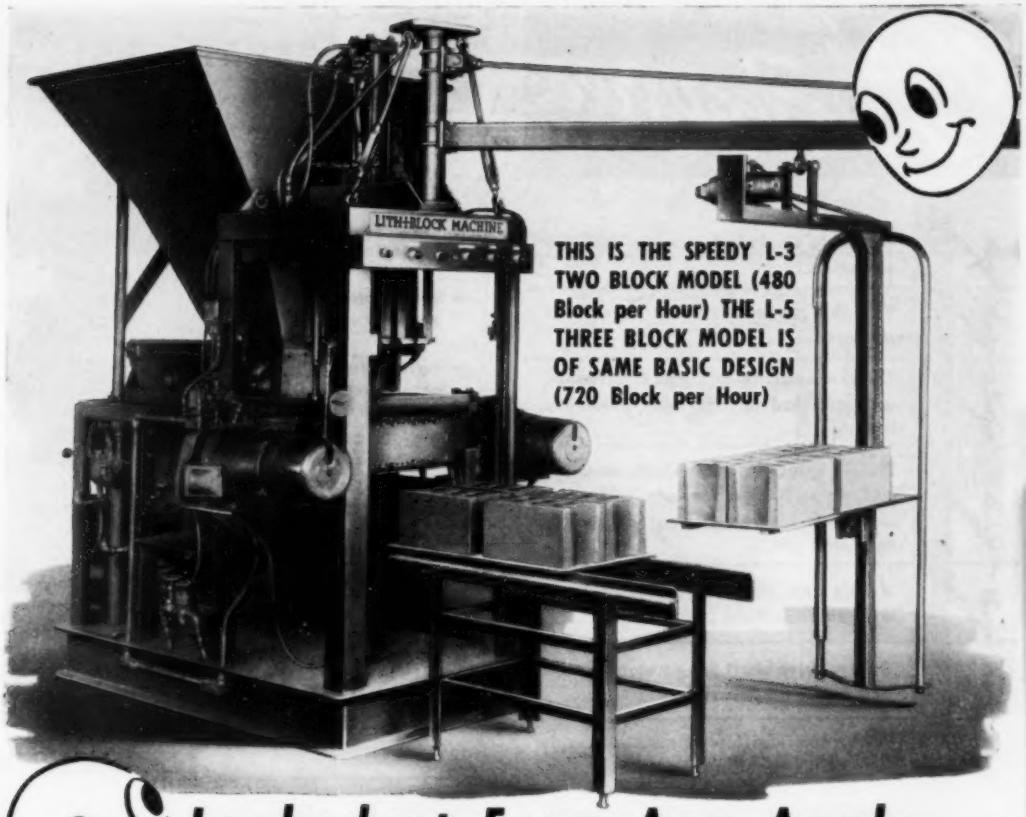
Ask your nearby Smith Distributor to give you all the LOADLIMIT facts.

THE T. L. SMITH COMPANY
2887 N. 32nd St., Milwaukee 45, Wis., U. S. A.

SMITH MOBILE

For BIGGER and BETTER Concrete Mixers and Truck Mixers Look to SMITH

A 5884-1P



THIS IS THE SPEEDY L-3 TWO BLOCK MODEL (480 Block per Hour) THE L-5 THREE BLOCK MODEL IS OF SAME BASIC DESIGN (720 Block per Hour)

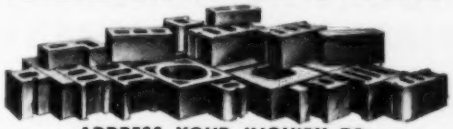
Looked at From Any Angle, It's The Machine That's Engineered To FIT THE AGE!

If your business can stand some streamlining — greater production efficiency — greater handling economy — greater time-saving in cubing and mold box changeovers — then the key to your whole program is found in the smoothly efficient straightline LITH-I-BLOCK Machine. Ask any LITH-I-BLOCK producer.

If you want to cut yourself a bigger slice of the concrete products market in your territory, then you have all the more reason for hitching your wagon to the LITH-I-BLOCK star — for it's a star that is rising higher and higher, brighter and brighter. Architects, builders, contractors and masons — all down the line — go for the clean-cut, uniform, perfectly finished masonry units turned out so accurately by the LITH-I-BLOCK machine.

Get set for the Age in which you are doing business — get the machine that Fits the Age — get going with LITH-I-BLOCK!

LITH-I-BLOCK



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Check these Features

- ✓ Finger-tip single valve control for easy operation.
- ✓ Variable speed drive on hydraulic pump.
- ✓ Timken bearing-equipped turntable, grease-sealed for life, with automatic locking.
- ✓ Easily replaced packer shaft, mounted on lifetime Timken bearings, with oversize stuffing box to protect against sand and grit.
- ✓ V-Belt and chain drive throughout, with oversize Twin Disc clutches.
- ✓ Square drive shaft for greater strength and easily obtainable replacement.
- ✓ Fewer lubrication points, with only four points requiring daily lubrication.
- ✓ Makes 3 and 4 foot joints up to 18" Diameter. Quick change from one size to another.

These are just a few of many outstanding features of Dixon Model "C" Hydraulic Pipe Machines . . . features that mean money in your pocket because they contribute to faster production, lower operating costs, better pipe and higher profits. Write today for complete information.

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Manufacturers of:

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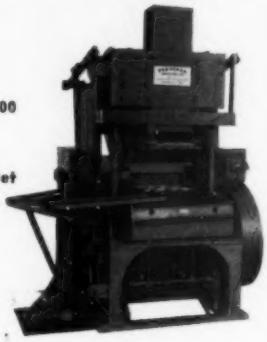
Pipe Bend Machines
Dixon Mixers

Dixon Conveyors
Off-Bearing Carts
Septic Tank Forms

PRASCHAK 1951 "AUTOMATIC 400"

- **PRESS HEAD** pressed top blocks
- **TAMPER** tamped at rate of 200 blows/minute
- **VIBRATION** powerful, variable, yet smooth
- **AUTOMATIC** capacity of 400 blocks/hour
- **LOW PRICED** $3995.00 complete



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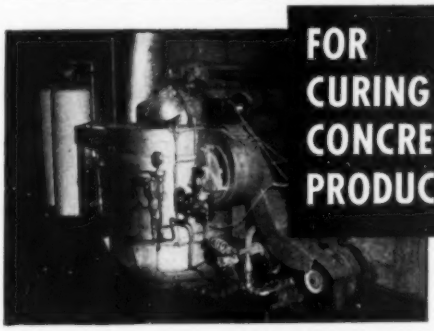
We also manufacture:

Mixers, Silo Stave Machines, Lift Trucks, Conveyors, Cinder Crushers, Cup Elevators, Rotary Screens, Power Off-bearers.

PRASCHAK MACHINE CO.
MARSHFIELD WISCONSIN



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LITTLEFORD "Kwik-Steam" Vapor Generators

Curing of Concrete Products now can be done at the minimum of cost by using a Littleford "Kwik-Steam" Vapor Generator. These small, compact units are the fastest steam producing generators ever designed. They will produce steam in 2 minutes time from a cold start, are low cost in operation as they burn fuel oil and only produce steam when steam is needed. The "Kwik-Steam" Generators are completely automatic; no special trained operator is needed to run the Generator. Made in models to fit any size curing room. Sizes from 20 to 165 B.H.P.

LITTLEFORD BROS., INC.
403 E. Pearl St., Cincinnati 2, Ohio

Low first cost— low cost per ton handled

HYSTER *Salsbury* Turret Trucks

- ✓ **SIMPLE TO OPERATE.** Anyone can drive a HYSTER *Salsbury* Turret Truck.
- ✓ **USES LESS THAN ONE GALLON OF GASOLINE** per average 8-hour shift.
- ✓ **GREAT MANEUVERABILITY.** 360° steering is done through the drive wheel.
- ✓ **FULLY AUTOMATIC CLUTCH AND TRANSMISSION.** No gear shifting, no levers. Provides the power required under ALL DRIVING CONDITIONS. The truck can be "inched" along or driven up to 8 miles per hour fully loaded; 10-12 miles per hour when empty. Operator rides, or walks alongside truck.
- ✓ **TURRET POWER UNITS** are interchangeable on all Turret Trucks.

HYSTER is one of the oldest names in the materials handling industry. . . . HYSTER trucks are sold and serviced by 52 dealers in the United States and Canada and by dealers in 58 foreign countries. Wherever you are, sales, service and parts are available on the Hyster line of industrial lift trucks, Straddle Trucks, Karry Kranes and HYSTER *Salsbury* Turret Trucks.

PALLET TRUCK. Transports loaded pallets weighing up to 4000 pounds. Several fork lengths. Hydraulic fork lift.
PLATFORM TRUCK. Handles loads of 4000 pounds on skids or tote boxes. Several lengths and widths. Hydraulic platform lift.
TUG. Tows trailer trains up to 20,000 pounds. Most maneuverable towing unit on the market.
CARGO TRUCK. Capacity 4000 pounds. Low platform makes bulky or heavy cargo handling easy.
HYSTER

Operator Either Rides or Walks . . .

HYSTER *Salsbury* Turret Trucks compare in cost to most "walker-controlled" trucks—with all the features of rider-operation.

These horizontal transporters handle any type of load up to 4000 pounds. They go anyplace where man-pulled or power-driven trucks of the "walker-controlled" type can go—and the operator EITHER RIDES OR WALKS.

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Blocks per hour . . . *with* OSWALT SERVICE
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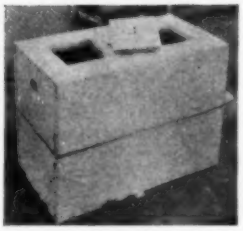

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We can do this double job if we all work together to turn out more for every hour we work—if we use our ingenuity to step up productivity.

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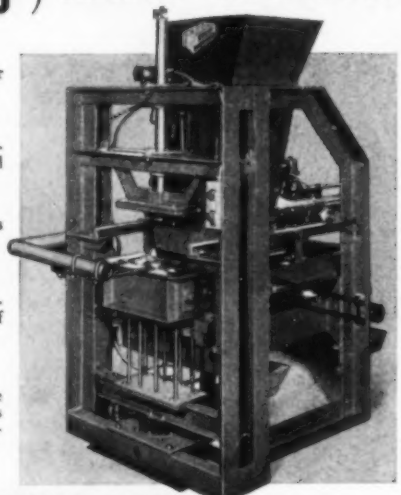

This new semi-automatic machine brings to smaller operators all the high production and low cost advantages heretofore enjoyed only by large producers.

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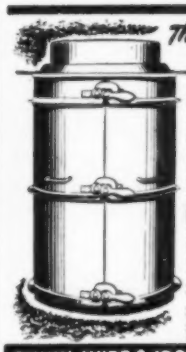

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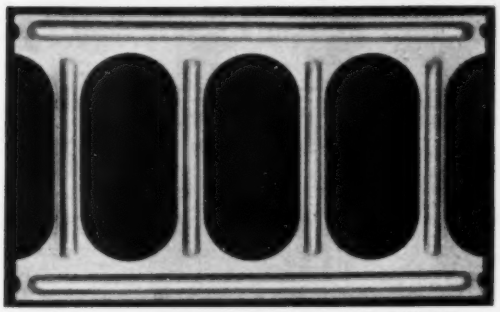

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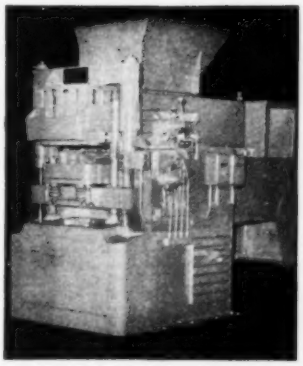

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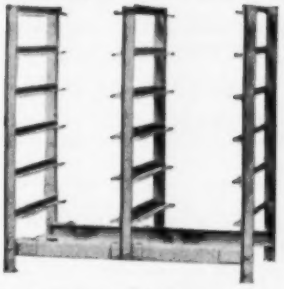

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IN REPLY STATE CONDITION AND PRICE.

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Will pay cash. What have you?

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C/O The Concrete Manufacturer
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3—8" Mold Boxes excellent condition. Prices	$35.00.00
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Pressed Steel Pallets
All Pallets in perfect condition.

4000— 3"	25c ea.
6000— 4"	35c ea.
8000— 8"	48c ea.
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Thousands of steel aluminum and cast iron pallets in stock.
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We buy complete plants for cash. **Phones: Gl. 6-1337—Gl. 6-1338**

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MARTIN PACKER HEAD MACHINE

Used very little—Condition Excellent
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Price only $7500.00

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(1) Air Operated Offbearer
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Lightweight fire safe 50 to 70 lbs. per cu. ft.
Cinders Kiln made
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All aggregates processed ready to use.

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FIRESAFE ECONOMICAL DECAY-PROOF

DURABLE STORMPROOF TERMITE-PROOF

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1. Making block that complies with ASTM and Federal specifications for dryness, strength, absorption.

2. Keeping a list of quality concrete masonry buildings in your community from which you can select examples to show prospects.

3. Furnishing prospects with names of architects and builders who can be depended on to design and build quality concrete masonry structures.

PORTLAND CEMENT ASSOCIATION

33 W. Grend Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete...through scientific research and engineering field work

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*See also Detailed Information in 1950 Pit and Quarry HANDBOOK and Concrete Industries Yearbook

Another Leader

IN THE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS

★ This is the 89th of a series of ads featuring leaders of the Concrete Products industry who are stepping up block production with Besser Vibrapac machines.

W. M. Stoner, Jr., Pres. of Western Concrete Products Co. with other company officials: W. M. Stoner, Sr., H. L. Sherwood, and R. Sherwood.

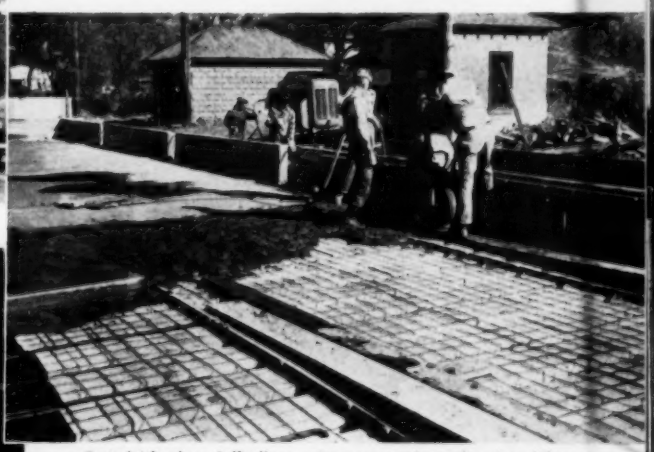
WESTERN CONCRETE PRODUCTS CO. of Lincoln, Nebraska is a subsidiary of Western Brick & Supply Co., which recently celebrated its Golden Anniversary. The company is one of the outstanding producers of concrete masonry units in the Middle West, operating Besser Vibrapac machines at both their Lincoln and Hastings plants.

For many years, Western Brick & Supply Co. manufactured common and face brick, but soon discovered the profit possibilities of supplying both brick and block. Today the two block plants manufacture more than a hundred types of block — including sand and gravel units, Haydite and pumice block, Soffit block and concrete brick — all made on the Vibrapacs. The market covers a radius of 300 miles. Due to the dependable day-in, day-out performance of the Vibrapac machines, plus an unusually aggressive promotional program, production of block has been stepped up to 3½ million 8" equivalents, annually.

BESSER MANUFACTURING CO., Alpena, Mich., U.S.A.

Complete Equipment for Concrete Products Plants

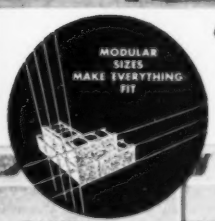
Exterior view of the Western Concrete Products Company's plant at Hastings, Nebraska.



Typical job where Soffit floor units were used, produced on Vibrapac machines at the Western Concrete Products Co. plant. During the last 6 months of 1950, Western furnished 150,000 Soffit Block for floors and roofs, using 500 Acrow Telescopic Centers supplied by Besser.

Besser Super Vibrapac three-at-a-time machine at the Hastings plant. Fully automatic. No lifting. One man merely guides the power off-bearing hoist.

One of the many concrete brick homes in this area. All brick made on Besser Super Vibrapac.



BESSER

BATCH MIXERS · SKIP LOADERS · BLOCK & BRICK CUBERS · SUPER VIBRAPAC · SINTERING PLANTS · ACROW CENTERS · ROOF TILE MACHINE

Research and Development Tower, S. C. Johnson & Son, Inc., (makers of Johnson's Wax) Racine, Wisconsin. Archt.—Frank Lloyd Wright, Spring Green, Wisc.; Contr.—Wiltscheck & Nelson, Racine, Wisc.; Pozzolith Ready-Mixed Concrete furnished by Consumers Co., Racine, Wisc.

THE best evidence of the exceptional qualities of Pozzolith Concrete is its wide use in such outstanding structures as this ultra modern research laboratory.

Here Pozzolith provided the requirements of high strength with high slump — important because of the heavy concentration of reinforcement.

Other benefits of Pozzolith resulting from its cement dispersing, water reducing action are:

- BETTER WORKABILITY WITH LESS WATER
- MINIMIZED BLEEDING AND SEGREGATION
- EASY FINISHING
- REDUCED SHRINKAGE
- LOW PERMEABILITY
- GREAT DURABILITY

Investigate the advantages of Pozzolith for *your* next job . . . it will enable you to obtain the qualities required *at lower cost than by any other means.*

Ask for full information.

Over 500 Leading Ready-Mixed Plants are now equipped with the POZZOLITH AUTOMATIC DISPENSER

WHY?

Because a producer can, at lower cost:

1. Produce concrete of low permeability . . . with normal Portland cement.
2. Produce high-early strength concrete . . . with normal Portland cement.
3. Produce air entrained concrete without strength loss . . . with normal Portland cement.
4. Produce all of the above properties out of one cement bin . . . with normal Portland cement — stepping up production, reducing inconvenience in handling and cutting costs.

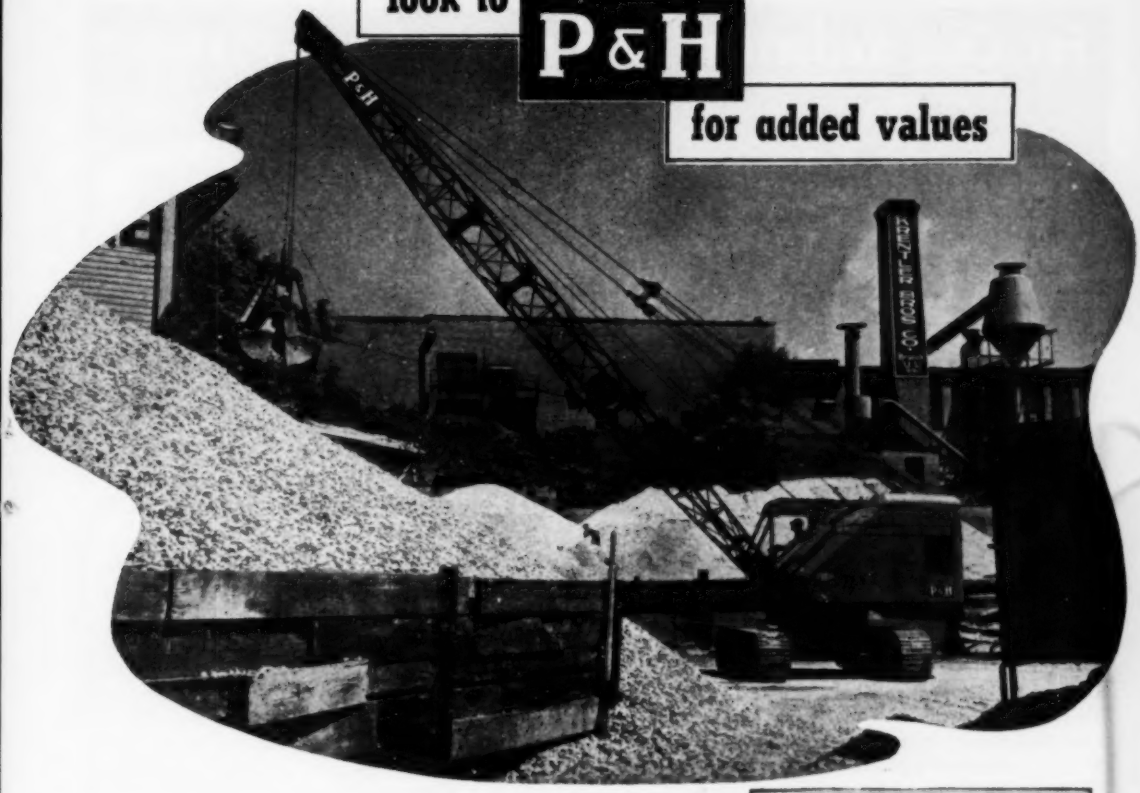
•

In normal mixes, concrete of any given durability, strength and workability, is produced more economically with Pozzolith than by any other means.

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — TORONTO, ONTARIO

look to **P&H** for added values



ADD P&H efficiency
CUT handling costs!

You can slash materials handling costs with modern, more mobile, faster operating P&H Excavators.

Added Values like these will reward you with stepped-up digging speeds and provide new freedom from profit-wasting delays:

Hydraulic Control — for faster, smoother working—easier on machine and operator.

True Tractor Type Crawlers — advanced design for more dependable travel, easier steering. Tight or wide turns or right-about-face made without stopping.

Welded Construction Throughout — of rolled alloy steels for greater strength, rigidity without needless dead weight; shockproof.

Whether it's a shovel for pit work or a clamshell for yard service, you will profit from P&H Added Values. For complete literature fill in coupon, attach to your business letterhead, and mail.

P&H Excavators are built in all sizes and types through 6 cubic yards capacity; gasoline, diesel or electric power.

MAIL COUPON ON YOUR BUSINESS LETTERHEAD NOW!

P&H HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS • HOISTS • WELDING ELECTRODES • MOTORS

EXCAVATORS
4451 West National Avenue
Milwaukee 14, Wisconsin

Harnischfeger Corporation
4451 W. National Avenue
Milwaukee 14, Wisconsin

Gentlemen:

Please send literature on P&H Excavators from —— to —— cubic yards capacity. ☐ Include information on P&H Truck Cranes.

Company .....

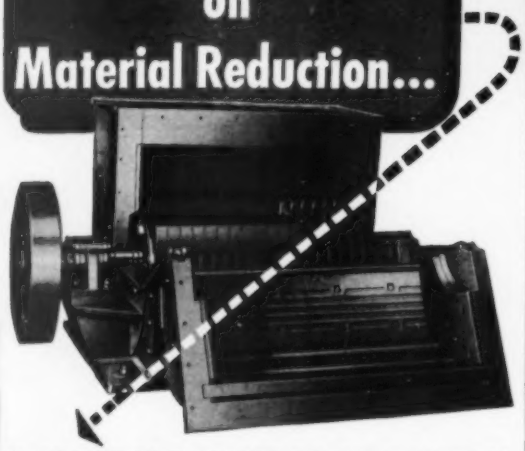
Address .....

City ..... Zone State .....

Attention of ..... Title .....

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS and ELECTRODES • CRAWLER and TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES

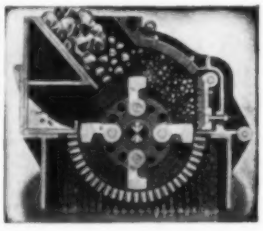
For Cost Reduction on Material Reduction...



WILLIAMS' "HEAVY-DUTY"
HAMMERMILLS

Built to take 6" feed and reduce to agricultural limestone, ¾" stone and other small sizes in *one operation!* Crushing occurs on unusually heavy breaker and grinding plate before reaching grate. This permits grates to be used for sizing only, minimizing wear. The result; more output, more quickly reduced at less operating cost.

Sectional view of Williams "Heavy-Duty" hammermill, with heavy liners and grinding plate for limestone and other hard material. Particular attention is directed to the grinding plate adjustment which assures uniform close contact of hammers and grinding plate at all times. Also note the metal trap which provides an outlet for the escape of tramp iron.



WILLIAMS ALSO MAKES...

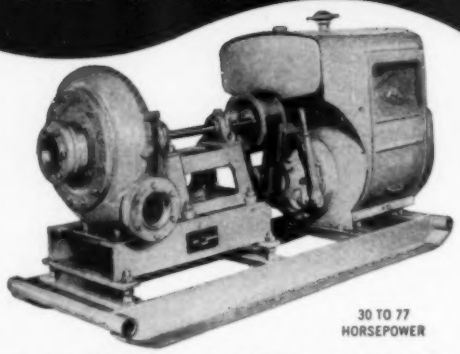
Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

WILLIAMS PATENT CRUSHER AND PULVERIZER CO.
802 ST. LOUIS AVE. ST. LOUIS 6, MO.

WC48-4

WILLIAMS
CRUSHERS GRINDERS SHREDDERS

NEW *Lightning* PORTABLE SAND AND GRAVEL PUMPS



30 TO 77 HORSEPOWER

SELF PRIMING... 4 AND 6 INCH SIZES

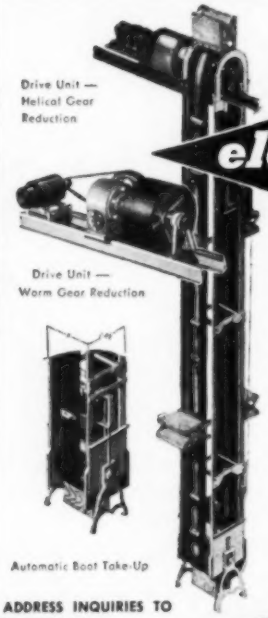
New design for a wide variety of uses and pumping conditions. 4-inch pump has 30 H.P. air-cooled engine; 6-inch pump has 6-cylinder radiator cooled engine. All wearing parts are of Hi-Chro-Hi, a super hard, abrasion resisting semi-steel. Maintenance is negligible, parts replacement is simple.

Manufacturer of Sand and Gravel Pumps — 3" to 10" Size

Write for FREE CATALOG

KANSAS CITY HAY PRESS CO.
801 Woodswether Road Kansas City 6, Mo.

EHRSAM employees elevator ... saves you money



By speeding up interfloor communication. *No waiting* — another step passes in a few seconds.

Takes up little space. Installation costs are moderate.

Handy *manual control rope* and an *automatic safety stop* guarantee safe operation.

The EHRSAM employees elevator is made in three belt widths, 12, 14, and 16 inches, and with 3 and 5 H.P. drive units. Special designs available for handling bags and boxes. Write today for more complete information.

ADDRESS INQUIRIES TO DEPARTMENT P

THE J. B. EHRSAM & SONS MFG. CO.

ESTABLISHED 1872 ENTERPRISE, KANSAS, U.S.A.

FOR SALE AT LIQUIDATION PRICES!!

STEEL STORAGE BINS AND SILOS:

2—40' dia. x 40' high
4—15' dia. x 20' high, cone bottoms
4—15' dia. x 20' high, open top
1—15' dia. x 23'6" high, open top
1—15' dia. x 36' high, open top

DERRICK: 10 Ton American Hoist & Derrick Co. Stiff Leg Derrick, Practically New.

HOISTS: Vulcan and S. Flory Mine Hoists.

SCREENS: Link Belt, McLanahan, and Chalmers-Williams Single and Double Deck, and Rotary.

BUCKET ELEVATORS: Link Belt, 30' and 77' centers.

DRIER: 5' x 40' Reeves Bros.

PAN CONVEYOR: Link Belt, 36" x 105'.

CRUSHERS: McLanahan Single Roll, Jeffery Type B, and Traylor Model 4½ Gyratory.

STEEL BUILDING: 224' overall x 38' corrugated siding.

Located at the former
NORTH AMERICAN CEMENT CO.
(Berkeley) Martinsburg, W. Va.

For Inspection, Prices and Details
Write — Wire — Phone

Industrial Plants Corporation

90 WEST BROADWAY *BArclay 7-4185* **NEW YORK 7, N. Y.**

For more efficient screening

Equip your vibrating and shaking screens with Hendrick Perforated Plate, which maintains uniformity of mesh throughout an unrivaled length of service life.

Such length of service makes for economy too! Then the full clearance of perforated plate minimizes clogging — an important time-saving feature. A still further time-saver is the ease with which decks can be changed, cutting down labor costs.

You can secure Hendrick Perforated Plate, with any desired shape and size of perforations, in proper gauges of tank, high-carbon, high-tensile, and abrasive-resisting steels, and in other commercially rolled metals. For further details write for a copy of Hendrick Perforated Plate Catalogue.

SEE OUR CATALOG IN SWEET'S

HENDRICK
Manufacturing Company

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
Shur-Site Treads, Armorgrids

39 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

"I want to see Americans save..."

JOHN L. COLLYER
President, The B. F. Goodrich Company

"I want to see Americans save for their own personal security, and I want to see them, as stockholders in our government, urge economy in all phases of our national life in order to provide national security against aggression."

By their rapidly mounting participation in the Payroll Savings Plan, Americans *are* saving for their personal security, fighting the menace of inflation and making a major contribution to America's defense against aggression. In Mr. Collyer's own company 80% of the 38,000 employees throughout the company have already enrolled in the Plan, with two large divisions still to report.

As Chairman of the Ohio Payroll Savings Advisory Committee, Mr. Collyer knows what is being accomplished by leaders of industry, top management and labor in their joint effort to step up the Payroll Savings Plan. A few recent figures should be interesting to those not so familiar with the national picture:

• In the steel industry campaign, Carnegie-Illinois Steel Corporation (now U. S. Steel Company), recently raised its payroll participation from 18% of 100,000 employees to 77%... Columbia Steel Company of California went from 7.9% to 85.2% ... American Bridge Company signed 92.8% of the workers in the large Ambridge plant ... 87% of Allegheny-Ludlum Steel Corporation's 14,000 employees are now on the Payroll Savings Plan ... Crucible Steel Company of America, reinstating its plan, signed up 65% of its 14,500 employees.

• In the aviation industry, Hughes Aircraft Company went from 36% to 76%; Boeing Aircraft enrolled 10,000 new names before Christmas.

Some dollars and cents figures? In the last quarter of 1950, sales of $25 E Bonds—the denomination so popular with payroll savers—increased 2.5% by 245,000 bonds more—over the last quarter of 1949.

If you do not have The Plan That Protects the personal security of your employees, the national economy and our country's defense, phone, write or wire to U. S. Treasury Department, Savings Bonds Division, Washington Building, Washington, D. C. Your State Director is ready to help you install a Payroll Savings Plan or step-up your employee participation.

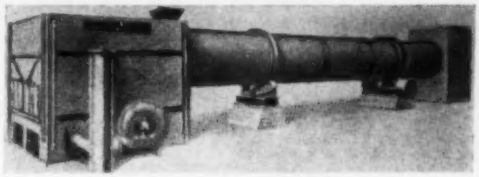
The U. S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

PIT and QUARRY

Looking for Used Equipment?

Refer to the listings in this issue for a wide variety of used and surplus machinery and supplies.

DRYERS & KILNS . . *for all purposes*



W. P. HEINEKEN
ENGINEER & MANUFACTURER
50 BROAD STREET NEW YORK, N. Y.

KING EXPLOSIVES

DETONITE
THE QUARRY EXPLOSIVE !

THE KING POWDER COMPANY, INC.
CINCINNATI 1, OHIO
Incorporated 1878
COMPLETE EXPLOSIVE REQUIREMENTS

BROADCAST P and Q SECTION

Quarries
Crushing Plants
Cement Plants
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E. Lee Heidenreich, Jr.
Consulting Engineer
67 Second St., Newburgh, N. Y.
Phone 1828

Operation
Plant Layout
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CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

POSITION OPEN

For experienced layout engineer, structural steel designers and draftsmen at engineering office of large cement manufacturing concern in the Lehigh Valley.

BOX NO. 505, c/o PIT and QUARRY
538 S. Clark St. Chicago 5, Illinois

WANTED
DESIGN ENGINEER

to take charge of engineering work for cement company in Eastern United States. Past experience in cement plant design highly desirable but not essential. State qualifications and salary expected.

Box No. 503, c/o Pit and Quarry
538 So. Clark St. Chicago 5, Ill.

Diamond Core Drilling
CONTRACTORS
Fireclays, coal, limestone, gravel deposits, all minerals. Blast hole drilling.
MOTT CORE DRILLING CO.
Huntington, West Virginia

POSITION VACANT

A young Assistant Plant Manager needed to aid a busy Manager in the operations of a Cement Plant located in a large city. This plant is owned by a multi-plant organization with a splendid future to capable young men. Submit full details concerning age, experience and qualifications to **BOX NO. 504, c/o PIT and QUARRY**, 538 S. Clark Street, Chicago 5, Illinois.
(Our organization knows of this ad)

WANTED
QUARRY SUPT. FOR EASTERN PLANT
Box No. 500, c/o Pit and Quarry
538 S. Clark St. Chicago 5, Ill.

IMMEDIATE SHIPMENT

COMPRESSORS
40 CFM 100#, I. R., m.d.
150 CFM 50#, C30 Fuller, m.d.

CONVEYOR—BELT
32"x65' stainless steel, complete.

ELEVATORS—BUCKET
Webster 48', MI Buckets 14"x7".
Jeffrey 68', MI Buckets 10"x6".
50' centers, 4¼"x6½" buckets.

ELEVATORS—CHAIN—
WRITE FOR LIST.

FEEDERS & SCREENS
Syntron, vibra flow, type F-350.
Jeffrey-Traylor, type 4-JT 155.
Allis-Chalmers, electro magnetic, "Utah".
Hummer, screen, 3'x10'.
Syntron V200.

KILNS—COOLERS—DRYERS
#502-20 Roto Louvre.
3'x48'x⅜" shell.
4'6"x40' Traylor.
4'x60'x⅞" shell.
6'x14'x⅝" Struthers-Wells (2-NEW)

MISCELLANEOUS EQUIPMENT

MOTORS—TEFC & EXPLOSION PROOF—Ranging in sizes from 1 to 100 HP.
PUMPS—All sizes and capacities.
FANS & BLOWERS—All sizes from 1000 to 75,000 CFM.
REDUCERS—All sizes and ratios.

WRITE FOR BROCHURE OF EQUIPMENT.

Heat and Power Co., inc.
70 PINE STREET | DIGBY 8-0373 | NEW YORK 5, N. Y.

DRAGLINES
Lima 1201 and 802. P&H 1055, 955, 855. Osgood 1067. Manitowoc 4500. Marion 352. Northwest 95 and Model 8.

HI-LIFT SHOVELS
P&H 1055. Lima 1201. Manitowoc 3500 and 3000. Bucyrus-Erie 170-B and 54-B. Lorain 820.

STANDARD FRONT SHOVELS
Lima 1201 and 802. Manitowoc 3500. Lorain 79, 80 and 82. Bucyrus-Erie 170-B, 120-B, 54-B and 37-B. Northwest 80-D and Model 6.

MISCELLANEOUS
2—Super C Tournapulls. 12-15 yd. scraper. Rooter. Hyster D7N winch. International TD-24 dozer. 2—Moto Scrapers. LeRoi Tractair compressor with dozer, winch, hose and hammers.

BUYERS ALL OVER THE WORLD LOOKING FOR GOOD USED EQUIPMENT. SEND YOUR "SURPLUS" EQUIPMENT LISTS WITH COMPLETE DATA.

HAROLD W. HOOKER
R. D. 1 — Ellwood City, Pa.
Phone 1880

FOR SALE

(2) 24" x 40" Universal Roll Crushers w/ Corrugated Shells
(2) 75 H.P. Motors & Starters, Pulleys & V-Belts
A No. 1 condition 4 years old.
Sugar Creek Stone Quarry
E. F. Armbrust & Sons
Washington C. H., Ohio — RR#1

P & H DRAGLINE 4 YARD BUCKET
Model 1055L-C, excellent condition, less than 4 years old, 80' boom, Buda Diesel powered, crawlers 21' long, 42" wide, complete with extra bucket and 1500 watt Koehler light plant, F.O.B. nearest siding $60,000
Also Koehring 802 with 2 yd. bkt. and 50' boom. $25,000

Box No. 517, c/o Pit and Quarry
538 So. Clark Street — Chicago 5, Illinois

WANTED

Rock Crushing and Milling Manufacturer requires graduate Engineer for production work. Industrial experience in crushing and milling essential. Mechanical aptitude desirable. Applicant to include all details and salary desired in first letter.

Box No. M 2, c/o Pit and Quarry Publications
538 So. Clark St., Chicago 5, Illinois

"ACME" WANTS TO PURCHASE

Cranes, shovels, draglines, gravel plants, asphalt plants, crushers, diesel or gas locomotive cranes and truck cranes.

THE ACME EQUIPMENT COMPANY
14057 Schaefer
Detroit 27, Michigan

WANT TO BUY

1—36 x 48 & 1—48 x 60
JAW CRUSHERS

LESTAN CORPORATION
60 E. 42nd Street, New York, N. Y.

POSITION VACANT

A-1 steel and concrete designer who is also capable of designing and laying out of material handling equipment. In first letter state age, education, experience, references, and salary expected. All answers will be held confidential.

Box No. 302, c/o Pit and Quarry Publications
538 South Clark Street — Chicago 5, Illinois

WANTED

Qualified, capable, middle age Man for Superintendent of a Silica Sand Plant in an Eastern State. Give full particulars, age, experience, etc. Replies will be treated confidentially. Reply to:

Box No. 402, c/o Pit and Quarry Publications
538 So. Clark Street — Chicago 5, Illinois

WE WANT TO BUY
HYSTER AND CARCO TOWING WINCHES

SEND COMPLETE DETAILS

NATIONWIDE SUPPLY CO.
RAPID CITY, SOUTH DAKOTA

TEL. 204 & 2034
ASK FOR STEVE MORRISSEY

WANTED

One-half yard or yard good used power shovel on tracks or a high lift on tracks, describing same. Also—20 ft. conveyors with 20" belt.

Box No. 516, c/o Pit and Quarry
538 S. Clark Street, Chicago 5, Illinois

WANTED TO BUY

one dragline attachment less bucket for Model 604 Koehring Excavator.

Contact: Elmhurst-Chicago Stone Co.
Box 115 — Elmhurst, Illinois

POSITION WANTED

Experienced Quarry and Plant Superintendent available. 20 years experience, good production record. Available at once. At references.

Box No. 515, c/o Pit and Quarry Publications
538 S. Clark Street — Chicago 5, Illinois

WANTED

Magnetic Pulley Permanent 12" Dia.

SAUNDERS CONTRACTING CO.
P.O. Box 1131 — Huntington, W. Va.

WANTED

Late Model Bucyrus Erie 120B or 170B all Electric shovel, less than 4 years. D8 Tractors 2U series and D7 Tractors w/control units and angledozers.

The Chas. M. Ingersoll Co.
19030 Detroit Rd. — Rocky River, Ohio
EDison 1-1010

WANTED

To buy or rent a portable primary crusher on rubber, 18 x 36 or larger, having feeder and power.

H. B. GRAHAM QUARRY COMPANY
Gladstone, Illinois

WANTED

1 Farrel-Bacon Jaw Crusher 36x10 or 36x24

Advise—Price, Location & Condition.

H. E. FLETCHER COMPANY
P. O. Box 448 — Lowell, Mass.

Wanted

2—10 x 20 RB Jaw Crushers
1—4 x 10 or 12-2 Deck Screen
2—100' 24" conveyors
2—50' 24" Conveyors
with or without motors

McLAUGHLIN & SONS
Box 312 — CAMDEN, TENNESSEE

WANTED

1 double deck Universal Vibrating Screen 42"x96" Type MR. Please state price, condition and where located.

Roscoe Francke — Hanover, Illinois

L.B.SMITH INC.
OFFERS

AIR COMPRESSORS

Ingersoll-Rand 105 cubic foot on 2 pneumatics. Good condition.

Schramm 105 cu. ft. gas powered compressor on 4 steel wheels.

Gardner-Denver two-stage 160 ft., skid mounted.

Worthington 210 cubic foot, two-stage air-cooled, on skid base with Hercules diesel.

Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.

BELT CONVEYORS & BELT

New 18" — 24" — 30" — 36"

SHOVELS & CRANES

Lorain 75B, 1¼-yd. shovel, diesel power.

P&H 625A 15-ton crawler crane.

Lorain 55 clam-crane, 50' boom.

Brownhoist 1-yd. gas shovel and crane.

Lorain 30 combination ½-yd. shovel, hoe & clam.

WELL DRILLS & TOOLS

Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Sanderson-Cyclone #40 well drill with drilling tools, excellent condition. Mtd. on K-5 International chassis.
Bucyrus-Erie 21W, excellent condition, with LeRoi gas engine, mounted on International C30 chassis, complete with tool string.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

QUARRY EQUIPMENT & BINS

10 x 7 Allis Chalmers Blake type jaw crusher.
60 ton 2 compartment storage bin with clam shell gates.
Cedarapids No. 1 Kubit

MISCELLANEOUS

Barber-Greene 44C Trenching Machine.
Warco D76 grader, International UD14A diesel
Austin Western 77 tandem drive grader, 12' blade, scarifier.
½-yd. to 2-yd. clamshell buckets.
½-yd. to 5-yd. dragline buckets.
6-yd. and 12-yd. Sauerman buckets.

TRUCKS — TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GASOLINE AND DIESEL ENGINES

New and used Murphy 4-cylinder diesel.
GMC 6 and 12 cylinder, Practically new.
Buda, Hercules, Hill, rebuilt.

***Phone* HARRISBURG, PA. 7-3431**

LASTING • BONAFIDE • SERVICE — L.B.SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

EQUIPMENT BARGAINS!

Completely Rebuilt Williams Clamshell Digging Bucket, with New Cutting Lips, Teeth, Pins, and Bushings. Condition Like New.

60 Ton Watson-Stillman Hydraulic Jacks, New — In Original Shipping Cases.

BIRMINGHAM RAIL & LOCOMOTIVE CO.
BIRMINGHAM 1, ALABAMA

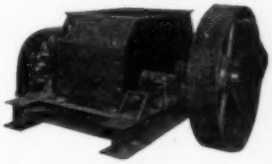
Byers 83, ¾ yd. Shovel.
Byers 71, Pullshovel and crane.
1948 Insley K-12 Pullshovel, 24" crawlers, excellent.
Pullshovel attach. Northwest 104.
Shovel attach. Insley K-12, 1948.
¾ yd. combination tractor shovel, and dozer, 1946, Cletrac, diesel.
New and used locomotive cranes.

J. T. WALSH
508 Brisbane Bldg. Buffalo 3, N Y.
Telephone: Washington 5797

SCALES—CRUSHERS—VIBRATING SCREENS CONVEYORS—FEEDERS—IDLERS

GUARANTEED EQUIPMENT — IMMEDIATE SHIPMENT FROM LARGE STOCKS

CINDER, PUMICE, PERLITE CRUSHERS



10 to 20 tons per hour capacity.....$ 479.00
25 to 50 tons per hour capacity..... 1144.00

VIBRATING SCREENS

Heavy duty eccentric shaft types. 1 to 5 decks; screen sizes to 5x14. Priced from $1573.00 including cloth or plate.

Eccentric weight type screens, 1 to 3 decks; sizes to 3'x8'. Including cloth or plates from $479.00.

TRUCK SCALES

15 Ton Truck Scales.....$545.00
20 Ton Truck Scales..... 617.00
30 Ton Truck Scales..... 684.00

Others to 50 ton capacity. All scales complete with structural steel weighbridge. Parts and weighing beams for most makes of motor truck scales.

BULK MATERIAL CONVEYORS

Flat belt type bulk material conveyors. Any length. Belt widths to 48". Prices from $435.00. Also troughing idler, picking tables, and flight conveyors.

TROUGHING IDLERS AND ROLLERS

All steel. Interchangeable with other well-known makes. Replaceable precision ball bearings. No bearing adjustments required. Easy to start and will run in cold weather. Rust-proof ball races; maintenance is negligible.

3-roll troughing idlers for 14", 16", 18", 24", 30", 36", and 42" belt widths. Priced from $22.00. 1-roll return idlers for 14" to 48" belt widths. Priced from $8.50.

PREFABRICATED CONVEYOR SECTIONS AND ACCESSORIES

Build your own conveyor; we have in stock standard sections, head and tail pulleys, screw takeups, gravity takeups, troughing and picking idlers and return rollers, belting, drives, speed reducers, sheaves, etc. Phone us your order.

BONDED SCALE & MACHINE COMPANY

110 Bellview, Columbus 7, Ohio

Phones: Garfield 2186; Eves. University 2832

BOILERS: 1 — Erie City, 150 H.P., ASME, return tubular, 4" tubes, 150 lbs. working pressure, pin hole grates and all fittings. 2—220H.P., 160 lbs. pressure, National Board, 3 drum, low head, complete.

BUCKETS: 6—Steubner 32 cu. ft. capacity, drop bottom, self-clearing. 1—Blaw Knox, 2 yd. capacity, Clam Shell Bucket, NEW condition.

BOOT BUCKET ELEVATORS: 2—62 ft. cc, manganese steel chain, buckets 16" wide.

SCREW CONVEYOR: 12" x 22 ft. with center bearing, 87 RPM, capacity 30 TPH.

CHAIN: 400 to 500 ft. Jeffrey No. 3 malleable roller chain with DE-1 attachments every fourth link.

FANS: 2—Buffalo Forge Co. #12 Turbo Conoidal Fans, 6" shaft, 50 H.P., A.C. motors.

DIESEL MOTOR: 122 H.P. Caterpillar D13000 complete with clutch, V-belt pulley.

CRUSHERS, GYRATORY: Various makes, size 12" x 44" up to 42" x 134".

CRUSHERS, JAW: Various makes, 3" x 5" to 48" x 60".

CRUSHERS, REDUCTION: Symons 2 ft. and 3 ft. Telsmith 2 ft. and 3 ft. Grasphere. Traylor 4 ft., type TY.

CRUSHER SPECIALS: 1—Allis Chalmers Superior 30" and one 7½ K, Gyratory. 1—Farrel 18" x 36" and one 24" x 36" Jaw.

DRYERS & KILNS: 5 ft. x 40 ft. up to 10 ft. x 90 ft., single and double shell.

PULVERIZERS: 7' x 9' Ball Mill with 250 H.P. motor. Marcy 7' x 16' Rod Mill with 200 H.P. motor. Hardinge 5' x 22" Ball Mill with 30 H.P. motor. 2—Raymond, 5 roller, high side, Mills with separators, fans, collectors, etc. 1—Bradley Giant Griffin Mill.

CLASSIFIER: WEMCO Simplex size 78" x 28½ ft., complete.

DRAG SCRAPERS: ¾ yd., 1½ yd. and 2 yd. capacity with Crescent buckets, electric and diesel powered. 1—Sauerman Crescent Bucket 5 yd. capacity.

HOISTS & DERRICK: 1—15 ton Guy Derrick 100' mast, 90' boom with or without gas or electric hoists, double drum, with swingers.

MINE HOISTS: Single and double drum, 150 H.P. to 2500 H.P.

EXCAVATORS: 4—Woolridge model TC, power control, Cummins diesel motors.

SHOVELS & DRAGLINES: 1—Bucyrus Erie 120-B, 4 yd. electric Shovel; also, one Bucyrus Erie 170-B, 6½ yd. electric, 3 phase, 60 cycle, 2200 or 4000 volt. 1—Lorain model 57, diesel Shovel, 1¼ yd. capacity. 1—Lima 850 combination Shovel and Dragline, 2 yd., diesel. 1—Lima 1002 Dragline only, 2½ yd. cap., 80 ft. boom, diesel. 1—Lima 802 Dragline, 2 yd. capacity, 80 ft. boom. 1 — Northwest 95 Dragline, 2½ yd. cap., 90 ft. boom. 6—Crawler tread, diesel powered Cranes, late type, current models, P & H, Northwest, Lorain, Osgood, 2 yd. and 2½ yd. capacity, with 60 to 80 ft. booms, wide treads and long cats.

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: Madison 3-8300—3-8301

SPECIAL OFFERING

1—new 18 x 32 solid steel frame style D crusher.

1—new 14 x 26 solid steel frame jaw crusher.

1—#6 McCully crusher in good running condition just taken from service.

2—6' dia. 12 x 16' long scalping screens 2¼" manganese perforations.

A number of new manganese steel screen sections for Allis Chalmers 6' revolving screens 2¼" perforations.

New and rebuilt jaw crushers in all sizes from 6 x 10 to 42 x 60.

ACME ROAD MACHINERY COMPANY — Frankfort, New York

Equipment Values!

Tractor-Dozer — "Caterpillar" Diesel D7, #4T3940, with LeTourneau angledozer, LeTourneau DDPCU. Engine completely rebuilt only 250 hours ago. Entire tractor completely gone over. FOB Paducah **$8,750.00**

Pump — Jaeger, centrifugal, Model 4XP, #P3081. A 4-inch pump that has been reconditioned. Just like new in looks and performance. FOB Louisville..... **$450.00**

Trailer—Semi-stake or platform, 10-ton payload, 25 ft. long, equipped with vacuum brakes, four 100x20 tires and 2-roller landing gear. Perfect condition. FOB Evansville, Indiana **$750.00**

Tractor-Dozer — "Caterpillar" Diesel D8, serial #1H6072, equipped with 12 ft. LeTourneau bulldozer and LeTourneau DDPCU. This tractor is in good operating condition, a bargain at the price. FOB Evansville, Indiana **$6,250.00**

Motor Grader — "Caterpillar" No. 10, #2K614SP, with scarifier and six teeth, moldboard, canopy top. Cleaned and painted. FOB Louisville **$3,975.00**

Tractor-Dozer — "Caterpillar" Diesel D6, serial #8U1507. A 1949 model tractor; 1875 hours on the hourmeter; with new Caterpillar #24 cable control unit and Southwest angledozer. This tractor is in A-1 condition. Do not pass it up. FOB Paducah..**$7,650.00**

ROY C.
WHAYNE
SUPPLY CO.
800 W. MAIN ST., LOUISVILLE, KY.
EVANSVILLE, IND. — PADUCAH, KY. — ASHLAND, KY.

MINE AND SLOPE HOISTS

1—20,000# Dbl. Drum Mundy w/o motor
1—26,000# Nordberg Sgl. Drum
1—10,000# Nordberg Sgl. Drum AC
1—17,000# Ottumwa Sgl. Drum AC
1—11,000# Ottumwa Sgl. Drum AC
1—16,000# Allis Chalmers Sgl. Drum
1—30,000# Allis Chalmers Dbl. Drum AC
1— 7,000# Flory Sgl. Drum AC

CARPULLERS AND LOADERS

1—20,000# Lidgerwood Car Spotter AC
1—20,000# Amer. Hoist Spotter
1—5000# Jeffrey Carspotter AC
1—6000# Brownie Carspotter AC
1—5000# Link Belt Carspotter AC
1—Stephens-Adamson Heavy Duty Loader & Piler. 7½ HP. AC. Cap. 350 TPH ORE, Fertilizer & Sand. Portable on wheels. 30" belt.
1—3 yd. Sauerman Scraper bucket Sys.

MISCELLANEOUS

1—11B Sullivan Cutter with Bowdil bar, chain and bug duster, 50 HP DC motor.
1—PL1114 Joy Elevator, 10 HP DC, permissable motor.
1—B. E. 3¼ yd. Electric Shovel B85.

Hawkins & Co.
126 So. Michigan Ave., Chicago 3, Illinois
Telephone HArrison 7-0725

FOR SALE

Pioneer Jaw Crusher, Size 1524, Latest Model. Used less than 30-days and is same as new. Roller bearing with grooved flywheel and feeder drive sprocket. Priced below dealer cost.

Shovel Front complete for Bay City Model 25. Used very little. Excellent condition. Price.....$1650.00

MARTIN - ROASA
TRACTOR & EQUIPMENT CO.
Cedar Rapids, Iowa

FOR SALE

Haiss Loader on rubber tires Model 75W Serial No. P.M.185.

Schield Bantam on half track with shovel, crane, drag and clam shell attachments.

Sauerman three (3) cu. yd. drag scraper with electric motor and controls.

Allegheny Sand & Loam Co.
Box 267, B1, R.D. #1, Leechburg, Pa.
Phone 42-5362

FOR SALE

SCREEN 3 deck Diamond Mogul Vibrator 4' x 12'
HOIST Thomas Single Drum type K
DRILL 50 Keystone Drill Rig complete on truck.

G. & W. H. Corson, Inc.
Plymouth Meeting, Pa.

FOR SALE

Bins 10 to 450 tons 200 Brl. to 750 Brl.
5 to 30 Yd. Wagons
Locomotives and Railroad Cars
Gravel & Washing Plants
Cranes—Crawler Truck—Locomotive—Gantry
Crushers—all sizes

"STONE THE CRANE MAN"
1132 Prudential Bldg., Buffalo 2, New York
Phone MOhawk 4494

FOR SALE

Shovel, Marion, Type 111M, Crawler Mounted, Diesel, 30' Boom, 23'8" Handle, 3½ cu. yd. cap. High Gantry, 16' crawlers with 36" Crawler shoes, Unit serial #8769, powered by G. M. Diesel Model 12101 Twin Engines with Generator and Electric Swing Motor. New 1948, used very little, excellent condition, reasonably priced.

Baron Iron & Equip. Co.
P. O. Box 104, Station "D"
Atlanta, Ga.

FOR SALE

1—B & W coal pulverizer
1—70 HP Marine type diesel engine
1—Vacuum pump
1—Deck hoist
Tug boat
Link Belt pan conveyor 36' x 22' centers
Fuller clinker cooling equipment for 10' kiln
Chain and belt elevators
2—Clam shell buckets

OLLIE E. LAWRENCE
P. O. BOX 688 QUINCY, MICHIGAN

GUARANTEED "REBUILT" POWER EQUIPMENT

SQUIRREL CAGE MOTORS

3 Phase, 60 Cycle, 220 or 440 volts (*2200 volts or higher)

H.P.	MAKE	TYPE	SPEED
1000	*G.E.	K6347S	1800
750	*G.E.	KT	720
500	*G.E.	PBG	1800
500	*Fr-Morse	HS	1200
400	*Cont (new)	NZ	1800
400	*Al-Ch	ARWW	900
300	*Westgh	CS	3600
300	G.E.	FT-559	1800
300	G.E.	IE	1200
300	Al-Ch	AR	900
300	Westgh	CS	514
250	Westgh	CS	1800
250	L-Allis	1468	720
250	Westgh	CS	600
200	Al-Ch (tufc)	ARZ	1800
150	G.E.	IE	1800
150	*Al-Ch	AW	1800
150	G.E.	IE	1200
150	Westg (new)	CS950A	3600
125	Westg (new)	CS504	3600
125	*Al-Ch	AR226	1800
125	G.E. TEFC	K6326S	1200
120	G.E. (new)	K6333	900
100	*G.E.	FT342Z	1800
100	Westg	CS	1800
100	U.S. (Vert)	CFU	1200
100	Burke	EM	1200
100	Westg	CS	1200
100	Cont. (new)	CS	900
100	G.E. (new)	K6333	720
75	Westg	CS761	1800
75	Westg (new)	CS505B	1800
75	G.E.	K505	1200
75	G.E.	KT346	1200

SLIP RING MOTOR

3 Phase, 60 Cycle, 220 or 440 Volts (*2200 volts or higher)

H.P.	MAKE	TYPE	SPEED
2000	*G.E.	MT30	240
1200	*Cr-Wh		240
650	Westg	HE	350
500	Westg	CW	350
300	*G.E.	IM	1800
300	G.E.	MT	450
200	G.E.	IM	1800
200	G.E.	IM	600
150	Westg (new)	CS772C	1200
125	G.E. (new)	M6333	900
125	G.E. (new)	M6334	720
100	G.E.	MT	1800
100	A.C.	ANY	900
100	G.E.	IM	720
100	Westg	CW	600
100	G.E.	IM	450
75	Star	0500	900
60	G.E. (new)	M505	1200
60	Westg	CW	900
50	G.E.	IM	1870
50	Al-Ch	ARY	1800
50	Westg	CW	1200
50	G.E.	IM	425
40	G.E.	MT336	1200
40	Westg	CW-644	900
40	G.E. (new)	M504U	900
40	Al-Ch	ARY223	720
35	Fr-Morse	UAB	1800
35	G.E.	IM	1200
30	Westg	CW	1800
30	G.E.	MT332	1200
25	G.E.	IM	1200
25	Al-Ch	ARY-220	900
20	Al-Ch	ARY-216	1200
20	G.E.	MT312	1200

MOTOR GENERATOR SETS

K.W.	MAKE	A.C.	D.C.
550	W-G.E.	2300	125
500	Westg	2300	250
500	Westg	550	250
500	Cr.-Wh.	220-440	250
450	G.E.	2300	250
400	Westg	2300	600
250	Westg-G.E.	440	250
200	G.E.	440	250
150	G.E.	2300/440	250
150	Cr-Wh	440	250
150	Al-Ch	220	125
100	G.E.	440	250
100	G.E.	220	250
75	Al-Ch	440	250
75	Westg	2300	110
60	Al-Ch	2300	110
40	Cr-Wh	220	125
40	Al-Ch	440	250
30	Cr-Wh	220	125
25	G.E.	440	250

DIRECT CURRENT MOTORS

H.P.	MAKE	TYPE	SPEED
375	Westg	PED	650
200	Westg	SK210	800
200	Reliance	1970T	675
175	G.E.	ELC11	750
100	G.E.	RC34	2500
100	Westg	SK173	850
100	Al-Ch	E152	575
40	G.E.	CQ2004	900
35	Cr-Wh	CM351	700
35	G.E.	G	600
30	Westg	SK120	975
30	Cr-Wh	CCM	450
30	Westg	SK93	1750

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Phone CAnal 6-2900 Today

CHICAGO *Electric Co.*

First Source for 40 Years

1320 W. CERMAK ROAD • CHICAGO 8, ILLINOIS

Better be a THINKER than a tinker. Buy DEPENDABLE E.C.A. REBUILT and RE-guaranteed PUMPS now.

PUMPS at practical prices, ready for shipment.

SPECIAL DERRICK

1—40 ton "Jumbo" guy derrick, 153'2" mast, 127'8" boom. Complete with blocks. Rated 40 ton, at 40° radius when using 103' mast, 80' boom. Special Price $2250.00. Located Salt Lake City, Utah.

PUMPS

1—8" Jaeger self-priming centrifugal pump. Model 8WPE. Powered by a 40 HP Howell splash proof electric motor 220/440/60/3, capacity 3000 GPM. Sale Price $800.00

1—8 CH&E centrifugal pump with Gould pumping unit, powered by 45 HP 4 cyl. Waukesha gas engine. Cap. 3,000 GPM at 30' head. Sale Price $750.00

2—6" Carter centrifugal self priming pumps. Ser. Nos. 2157-2756, powered by 4 cyl. Hercules Mdl. IXB gas engines. Cap. 75,000 GPH at 20' head. Sale Price ..... $600.00 ea.

1—4" Carter centrifugal self-priming pump $3900, powered by 4 cyl. Wisconsin air cooled gas engine. Cap. 30,000 GPH at 20' head. Sale Price $300.00

1—4" CH&E centrifugal self-priming pump, Mdl. 44DV, powered by 4 cyl. Wisconsin Mdl. VB4 air cooled gas engine. Cap. 30,000 GPH. Sale Price $300.00

1—4" C.M.C. centrifugal pump, Mdl. 40MB, powered by VF4 Wisconsin air cooled gas engine. Cap. 40,000 GPH at 30' head. Sale Price $300.00

PUMPS, GASOLINE

1—10" Jaeger self priming pump, Model 10P, with 6 cyl. Model JXC Hercules gasoline engine, capacity 3400 GPM at 25' head.

1—6" Carver self priming centrifugal pump, with 4 cyl. Le Roi gasoline engine, capacity 1500 GPM at 25' head.

1—6" Carter "Humdinger" self priming pump, with 8 cyl. 85 HP Mercury engine, capacity 1500 GPM at 25' head to 450 GPM at 90' head. Wt. 2800#.

3—3" Gorman Nupp self priming pumps, 4 cyl. air cooled engine, capacity 370 GPM at 20' head to 100 GPM at 80' head.

6—New 2" Marlow "Water Wizard" pumps, Mercury air-cooled engines, capacity 115 GPM at 10' head to 55 GPM at 50' head. Weight 110#.

PUMPS, JETTING

1—4" Goulds 4-stage jetting pump, Model 250-A-503-2 with 95 HP 6 cylinder Buda gas engine, water cooled manifold. Capacity 450 GPM at 110# pressure, 350 GPM at 185# pressure, 250 GPM at 215# pressure, 175 GPM at 235# pressure.

2—new 4" Byron Jackson jetting pumps, with 100 HP 8 cyl. Chrysler engines, capacity range 600 GPM, 116# to 100 GPM, 296#.

EQUIPMENT CORPORATION of AMERICA

CHICAGO 12, ILL. 1140 S. Washtenaw Ave. Phone NEvada 8-2400

CLIFTON HEIGHTS Dept. 4, PA. Suburb of Philadelphia Phone MAdison 6-2200

PITTSBURGH 30, PA. P. O. Box 933-P Phone FEderal 1-2000

NEW YORK 7, N. Y. Dept. PQ Phone Worth 2-0088 30-P Church St.

OWNER'S OFFERING

1—4' Ty-Traylor Reduction Crusher, 10" feed opening, Serial 37140, 31" P.D. 14-D groove pulley and D-315 drive belts, new 1941, as is F.O.B. cars, Greene, N. D., April 1, 1951 ..... $12,000.00

1—Lot of spare parts, almost all new, worth $8,000 offered to purchaser of above crusher only at.... 2,400.00

1—Robins 4 x 10 DD Vib. Screen, Serial GD-6514, as is, F.O.B. cars, St. Paul, Minn. 1,900.00

1—LeRoi 6 cyl. 6¾" x 7", 160 H.P. gasoline power unit, Serial 103998, Model M-RX-1S, Electric Starter, radiator, on skid, as is, F.O.B. cars, St. Paul, Minn. 3,000.00

1—14" Superior McCully Crusher, Serial #8467, with 10 D-Sect. V-Belt drive, including all spare parts on hand, as is, F.O.B. cars, St. Cloud, Minn. 3,500.00

1—10" Superior McCully fine reduction crusher, Serial #8090 with 10 D-Sect. V-Belt drive, including spare parts on hand, as is F.O.B. cars, St. Cloud, Minn. 3,000.00

J. L. SHIELY COMPANY
1101 Snelling Avenue North
SAINT PAUL 4, MINN.

SEE FURNIVAL FIRST

For the finest in used equipment at the best possible price!

3—Allis Chalmers HD 10 W Tractors equipped with Gar Wood Blades.

3—Super "C" Tournapulls with Cummins Engines.

1—Caterpillar D-7 Tractor, equipped with Le Tourneau Dozer.

1—Caterpillar D-7 Tractor, equipped with LaPlant Choate Angledozer.

1—Caterpillar D-4 Tractor, equipped with LaPlant Choate Angledozer.

1—Caterpillar D-4 Tractor, equipped with ¾ yd. Traxcavator.

1—Wooldridge BB85 11 yd. Carryall Scraper.

1—Super C Turnadozer.

1—Rex 34E Dual Drum Paver.

1—Mixermobile 2 yd. Drum, 35' tower, 10" extension.

CHECK WITH US FOR YOUR RENTAL NEEDS

IMMEDIATE DELIVERY!

1 MURPHY DIESEL MARINE ENGINE MODEL ME-100! 100 h.p. 5¾" bore x 6½" stroke @ 1800 r.p.m. with 3 to 1 twin disc reverse and reduction gear, twin disc, front end power take off, 20 h.p. @ 1200 r.p.m. 32 volts, 1500 watt generator, cooling water heat exchanger, fresh water pump, sea water pump, instrument panel and all accesories.

FURNIVAL MACHINERY CO.
54th & Lancaster, Phila. 31, TR 7-5200

3—9' x 170' ROTARY KILNS WITH 10' BURNING ZONES

DARIEN CORP., 60 E. 42nd, N.Y. N.Y.

USED EQUIPMENT FOR SALE

2—Shovel Fronts for ¾ Yd. Bucyrus-Erie Type B Steam Shovels. Booms, Sticks & Dippers. Condition: Excellent. Price: $500.00 each.

1—Speed Reducer, Model 9DA Falk. 100 H.P. Complete with Couplings. Ratio 11.5 to 1. Shaft Dia.—Input 2", Output 5". Condition: Excellent. Price: $1,000.00.

1—Electric Converter, Model FCE8 Reliance. 1½ H.P.—8 KVA—440 V. —60 Cy.—3 Phase. Condition: Good. Price $350.00.

1—Roll Crusher, Martin 18" Style F. Condition: Good. Price: $400.00.

1—Sectional Belt Conveyor—Farquhar #346, 14" x 17' with Motor, Hopper & Discharge Chute. Condition: Good. Price: $200.00.

2—Well Drills, Loomis Model 44 Clipper Full Crawler Blast Hole. Gasoline Powered. Condition: Excellent. Price: $4,500.00 each.

1—Scale, Exact Weight Style #2225, 10# Tare Beam, Dial 25#. Under 5# Over with Dustite Bagholder. Condition: Good. Price: $200.00.

1—Chrysler Motor Type C 36-520 8 Cyl., 3¼ x 4⅜ Gasoline with Electric Starter Including $150.00 Worth Spare Parts. Condition—Good. Price: $500.00.

THOMASVILLE STONE AND LIME COMPANY
THOMASVILLE, PA.

RUBBER CONVEYOR BELTING

At Lower Prices

Top Quality — Immediate Delivery

Width	Ply	Top-Bottom	Covers
18"	4	1/8"	1/32"
20"	4	1/8"	1/32"
20"	5	1/8"	1/32"
24"	4	1/8"	1/32"
24"	5	1/8"	1/32"
26"	5	1/8"	1/32"
30"	5	1/8"	1/16"
30"	6	1/8"	1/16"

And Other Sizes

TRANSMISSION BELTING
AIR HOSE (All sizes)
SUCTION & DISCHARGE HOSE
WATER HOSE
V BELTS
Also Mill Remnants

Write or wire collect for samples & prices

E. D. HEEHS & SON
1285 Hollywood Ave. • Memphis, Tenn.

FOR SALE

1—3' Shorthead Symons core crusher with V-belt drive, for motor listed below, serial #3507, good condition: 1—75 h.p. G.E. Motor 875RPM w/starter

1—Telsmith 84" x 12' Super Scrubber with V-belt drive, for motor listed below, serial #2012, good condition: 1—100 h.p. G.E. Motor 875RPM w/starter

1—16' Sturtevant Air Separator with V-belt drive, for motor listed below, serial #974, good condition: 1—75 h.p. Wagner Motor 1150RPM w/starter

1—10' Sturtevant Air Separator with V-belt drive, for motor listed below, serial #1011, good condition: 1—30 h.p. Fairbanks Motor w/starter

For additional information write:

M. O. WEAVER, INC., *Contractor*
539-5th Street, Des Moines, Iowa
Telephone No. 4-4393

PORTABLE CEDAR RAPIDS CRUSHING PLANT

Junior Tandem, Serial #11752, Complete with 603IC GM Diesel Motor —10" x 36" Jaw—24" x 16" Roll—23 Yard Bin with Conveyors $31,000.00

1—D-7 Caterpillar, Serial #3T6980, with Trackson Traxcavator $10,000.00

1—Thurman Portable Scale, 20 ton, 18' x 8' $1,250.00

1—P & H 150 Drag and Clam, 35' boom, Gas Serial No. 11580 .....$6,500.00

Complete Unit used on one job, 20 thousand yards, all in good condition, will sell all or separately.

C. A. Tarantola
4999 Fyler Ave. St. Louis 9, Mo.
PLateau 0300

AIR COMPRESSORS

SCHRAMM — 315 — Excellent condition — Sale or rent.

SCHRAMM — 105 — Deluxe — Like new — A bargain.

SMITH — 60 — Excellent condition. Price $550.00.

General Equipment and Machine Co.
511 E. Colfax, South Bend, Indiana

FOR SALE

1—Weld-Bilt hand hydraulic lift truck, BW-11 spring top frame. New —$225.00.

(A saving of $125.00)

C. A. WAGNER
107 S. Dearborn St. Chicago, Ill.

DEPENDABLE USED MACHINES

Special—Diamond 24x36 jaw crusher, welded construction, Timken bearings, exc. condition

Osgood 300 dragline
Speeder LS-60 shovel
Universal truck crane
½ yd. Sauerman skarkline
3000 lb. wrecking ball
Lorain 40 shovel and crane
3 ton Brookville 56" ga. locomotive
Galion Jr. patrol grader
Diamond port. road gravel plant
Many sizes of vibrating screens
Eagle bucket loader
Morris 10" gravel pump
Erie 8" sand pump
Bay No. 5 hammermill
Pioneer plate feeder

All above equipment reconditioned in our newly built daylight plant.

10004 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

FOR SALE

1—Sauerman, 1 cu. yd. Drag Scraper Machine, complete with Diesel driven 3 drum roller bearing hoist, 45 ft. head tower and all necessary fittings. Purchased new 1947. Used very little.

TRI-COUNTY BRICK CO.
P. O. Box No. 7 Wood-Ridge, N. J.

FOR SALE

LOCOMOTIVES

Porter 14 Ton—36" Gauge—Gas.
2—Whitcomb gas. 6 ton, 24" ga.
1—Brookville 10 Ton Diesel, 30" Ga. Like New.
1—Plymouth 8 Ton, Std. Ga., Gas.

COMPRESSORS

Worthington 15" x 9½" x 12—650 CFM—Complete with 125 HP—2/60/440 Synchronous Motor & Controls
1—C. P. 14 x 12.558 CFM.

DERRICKS

1—Ingram (new) 5 ton 8 L. 50' Boom.

MISCELLANEOUS

5—Hopper Cars 70 Ton 4 Pocket. Class H-25.

1—Flory D. D. Elec. Slope Hoist—150 H.P.
A.C. 600 KW Diesel Gen.—2300-2-60.

LOCOMOTIVE CRANES

1—Browning 20 Ton—D. D. 50' Boom—New Boiler Oil Fired 1943.

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$6500.00 NORTH CAROLINA

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Complete up-to-date Rock Plant. Practically new. Mainly consisting of—21" x 40" RR Austin-Western Jaw Crusher—40" x 22" Double Roll, Hammermill, Murphy Diesel Power, Screens, steel bins, complete. Can be seen in operation. Priced at 40% new price.

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New 1950. Excellent. Only been used four months. $9000.00 each.

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Sales $125,000 yr.; over 10,000 cu. yds. yr.; busy Indiana City of 16,000; 4 late model trucks with mixers; 2 tractors and trailers; well equipped; like new; low rent; large back log; price reasonable.

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Koehring 604 crane and dragline, Caterpillar 13000 motor, 2 yard drag bucket, 1½ yard clam. Machine like new. Located Malvern, Arkansas.

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25 ton Koppel quarry cars 56½" gauge

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200,000 & 100,000 Gallon Tanks & Towers
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175 acres or more of very fine gravel and sand land, in a fine location and can be bought cheap.

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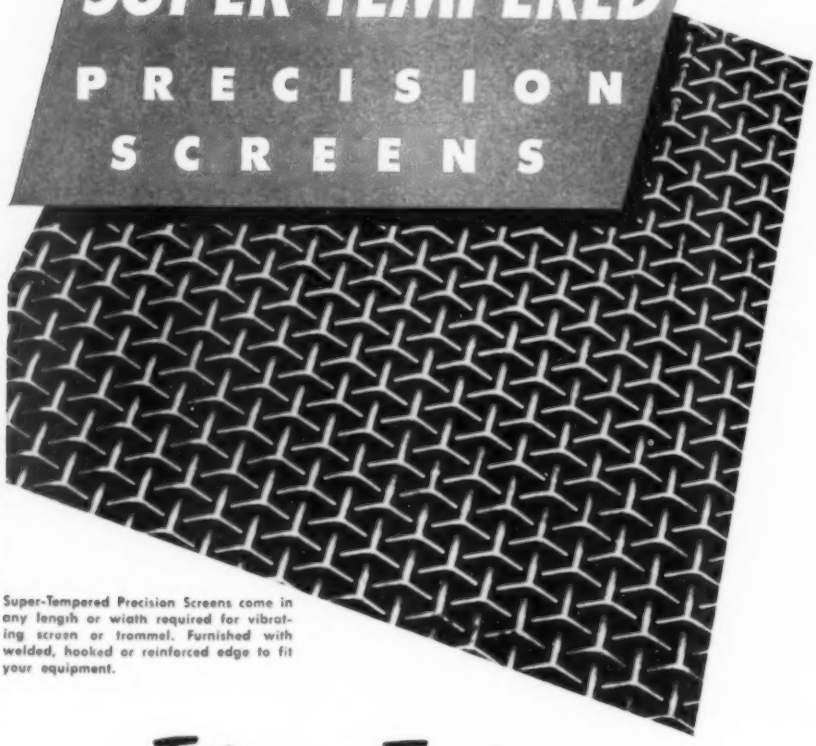

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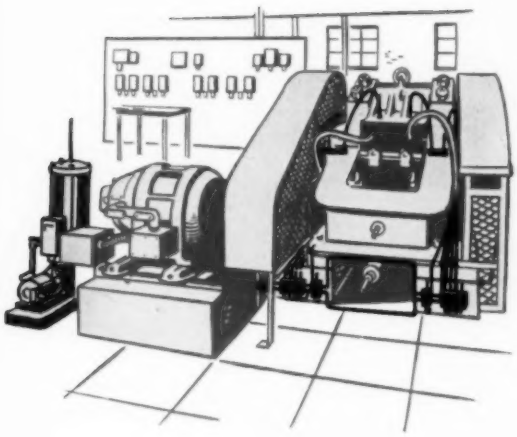

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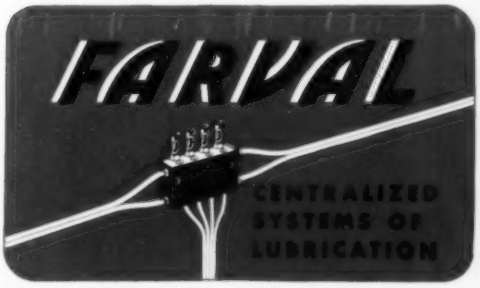

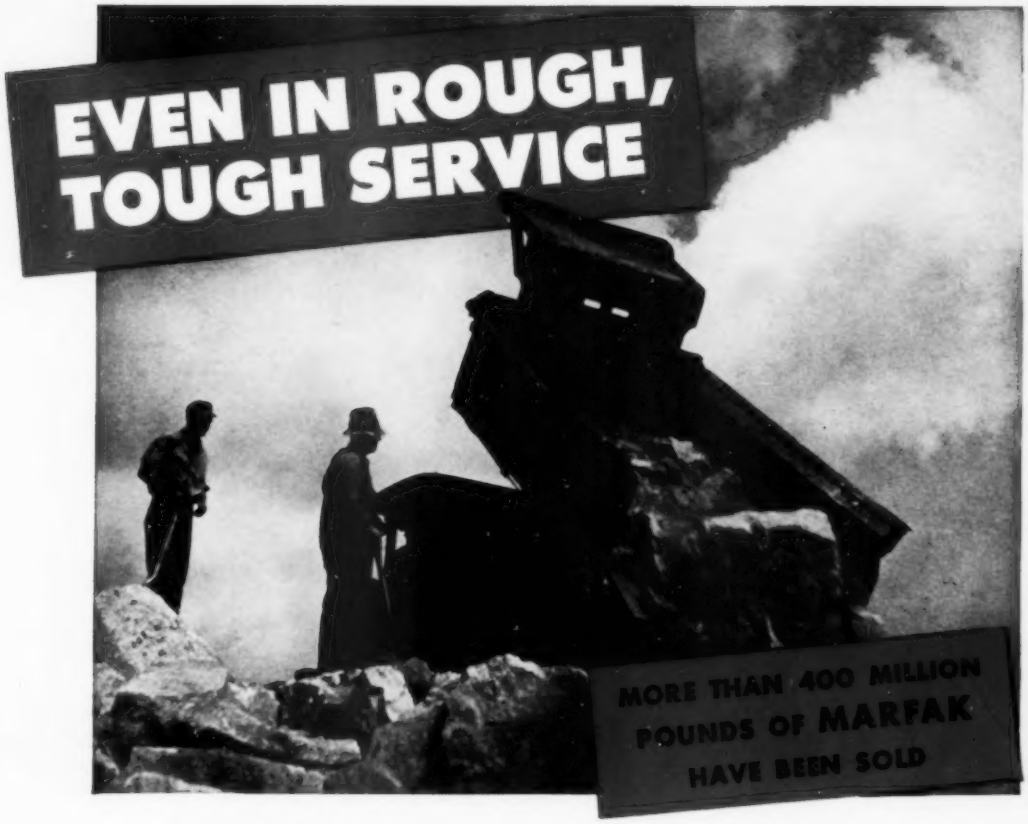

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